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VOL. XCVII., No. 26. **NEW YORK, DECEMBER 23, 1912.** WHOLE NO. 1,959.

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Confidence in the Accuracy of the Gas Meter.

[A Paper Prepared by MR. J. P. ZINGG, Montclair District, Public Service Gas Company, of New Jersey, for the December Meeting, Public Service Section N. C. G. A.]

I believe most of the complaints of high bills that come to gas offices are largely due to the customer's mistaken idea that the gas meter registers incorrectly. When the customer receives a bill which he thinks is excessive, his conclusion is that the meter is indicating more gas than has actually passed through it; and his mind is strengthened in such opinion because one night, when carrying coal from the cellar, he heard a noise in the meter, so he feels sure the meter is working overtime.

When we take into consideration the many years that the meter has been used as an instrument of measure, isn't it remarkable how few customers there are who even know how to read it; or, much less, who understand what a reliable machine it is? If the customer knew how to read his meter, nine-tenths of our complaints on high bills would vanish; if he knew how reliable a meter is (and read it monthly) our troubles on high bill complaints would be over. Hence the reason for this paper, which, it is hoped, will accomplish something in the way of "educating the public" to at least the reading of their meters. I make the statement that not more than 5 complaints in 1,000 can be traced to a fast meter. In other words, I maintain that, having analyzed 1,000 complaints, you will find that 995, if not the entire 1,000, had every meter been tested, would average 1 or 2 per cent. slow.

We all know that a majority of customers, when making complaint about a high bill, are sincere and honest in the belief that they have been overcharged. We have also found in many cases where we have persuaded the customer to read his meter and compute his own charges before receiving the bill from the Company, that we not only made him a satisfied consumer, but that he has kept others from coming to make complaints. The question is, "What is the means by which our customers can be made to read their meters and gain confidence in the accuracy of the meter?" It is expected that the discussion will bring out many suggestions as to how this may be done.

The instruction to read the meter as printed on our gas bills, is a step in the right direction, as are the exhibition meters displayed in our offices. A suggestion that the company give this matter space by itself in the newspapers would seem a profitable one; but in the last analysis it simmers down to the rank-and-file of the company to make it clear to the customer that his trouble is neither in the reading of the meter nor in the meter itself, but rather in his own use of the gas, which he can prove for himself with a little care and watchfulness.

If a collector, salesman, bookkeeper, or anyone else to whom a complaint on a high bill may come, would talk on the matter in the same convincing way before the meter was tested as he does after it has been tested, our customers would soon see we are in earnest and believe we know what we are talking about; and, as said before, not more than 5 in a 1,000 complaints can be traced to the meter. Why not meet the complaint with absolute confidence that the gas was used, and that the thing to do is to try to find out what became of it, rather than lay the fault to the meter?

The Board of Gas and Electric Light Commissioners, of Massachusetts, during the year ended November 30th, 1911, tested 457 meters on customers' complaints. Of these, 4 would pass gas, but would not register. The error of one, owing to a defect, could not be determined accurately. The average error of the remaining 452 was: 59 per cent. fast; 152 were fast (average, 4.52 per cent.), 64 were slow (average, 6.70 per cent.), and 236 were correct.

State.	No.	Per Cent., Fast or Slow.
Fast —	121	Between 2 and 5
Fast —	28	" 5 and 10
Fast —	3	" 10 and 15
Slow —	44	" 2 and 5
Slow —	15	" 5 and 10
Slow —	2	" 10 and 15
Slow —	1	18
Slow —	1	25

For instance, here we have a meter 25 per cent. slow, but the customer complains about his bill. This bill must have been 40 or 50 per cent. higher than the previous ones, and I can imagine the clerk at the gas office admitting when complaint was made that maybe the meter was wrong I say; don't let any such expression get away from you, because the complaint would be there if the meter were slow, even if it should be fast, that would never be the cause of the complaint. The gas was used, and the thing to do is to try and convince the customer.

A customer once told me he would not pay the bill because the meter was wrong. He knew it, because a stockholder told him so. Another customer told me that an executive in the gas office told him his meter must be wrong. Of course, I understand that neither the stockholder nor the executive told either of them exactly what they (the customers) understood; but, supposing the stockholder and the executive had said to them, "If your meter reads as the bill is made, you can be sure you used the gas," I doubt if either complaint would have reached the office.

There are men employed by gas companies who do not know how

to read a meter. This being so, how can they expect (when spoken to about an apparently excessive charge) to convince the customer that his bill is correct? They cannot do it; and it is natural for them to say, "Better have the meter exchanged." I venture to say that we have men in our bookkeeping departments who are not familiar with tests of meters, and, when spoken to socially, let the expression get away from them that maybe the meter was wrong. If there is a man here who does not know how to read his meter, let him get in the game and learn how. Go to the library and get the results of tests made, and he will be enthusiastic ever after on meters.

Often a salesman is told that because of bills that have been charged a prospective customer the latter will not listen to him. I have known a salesman to drop, for the time being, the object of selling and devote his time to showing the prospect how to read the meter and compute his own bills, after which the salesman had easy selling, and whenever that customer wants anything he calls for that particular salesman. The collector can save much time and money for the company by inducing the complaining customer to read his own meter aud often settle many a complaint right at the door.

No doubt, most of us have been spoken to about high bills, in the cars, on the streets, or in our homes or the homes of our friends. If, knowing how to read the meter and being familiar with the tests, we can assure them convincingly that there is nothing wrong, and that if they will but check up gas and, as they do with any other merchandise they buy, the charge would be understood.

It is not the intention of the writer to say that there are no fast meters, but he does emphatically say that practically no fast meters are ever brought for complaint to the office, and that the per cent of error a meter may have will not be noticed on the bills by the customer.

If our office and outside forces would eliminate from their minds the idea that a meter might be wrong, when considering an increase in a bill, and make their investigations with the assurance that the meter had nothing to do with it, meeting the arguments of the customer along this line, it would not take the customer long to realize that he must have used the gas registered against him.

Let us suppose a case of a complaint met by a member of the force who believes the meter is correct and talks accordingly. The collector rings the bell, the lady comes to the door and receives the bill. The bill is high; much higher than she expected. As the collector has always been gentlemanly she does not want to scold him, but merely says that she certainly did not expect the bill to be half that amount. Does he think there is anything wrong? The collector takes the bill, goes over the subtraction and extension, hands it back and says, "No; it is correct;" "Maybe it was read wrong?" "Would he go down stairs and see?" Of course, he will! He does, and finds it correct. "Maybe the meter is wrong! Does he think so?" He says, "No." Are meters ever wrong? Yes, sometimes; but a very small percentage, so small in fact that as her bill is only $8 she would never notice it and certainly not as she expected it to be only $4. She thinks she will go to the office, which she does and demands at once that meter be changed, or she asks for a prepayment meter. She is given to understand that, as we are in business to give her service, we will be glad to exchange the meter or install the prepayment type, but we feel sure that it is not the correct way to remedy her trouble. "What is the right way?" "Will she read her meter once a week for the next month, and then, if she feels that the bill is still too high, let us know?" Well, she feels sure that the meter must be wrong. We tell her we tested thousands of meters last year with an average of less than 1 per cent. error, and we feel quite sure she would never notice so small an error; besides, it is more likely to be slow than fast. Also, we never knew it to fail, where a customer read his own meter, that the next bill was reduced by eliminating any waste. "Would we show her how to read the meter?" Of course, we would. She agrees to read the meter, and, when paying the bill again, expresses her doubt about the meter. The cashier says: "Madam, I have been in the gas business for 10 years, and I can assure you that, as an instrument of measure, the gas meter is the very best measurer that I know of." It makes her feel that maybe, after all, the family used more gas than she thought.

We come across some very strange differences in bills, and apparently unaccountable increases, but there is always a reason. Sometimes we can find it, sometimes not, but you can be sure that whenever there is aa increase of 30, 40 or 50 per cent. it will never be accounted for on the basis of a fast meter.

Every man in the company should be a unit in declaring that, when a charge is made out, entered on our ledgers, barring error in reading or clerical mistakes, there is absolutely no question but that the gas was delivered and that the customer should explain what became of it, rather than the company. If every man will have confidence running through his talk, like the silk thread in a dollar bill, it will stamp his argument genuine and place the burden of proof on the customer, thus putting him on the defensive.

(Continued from page 397.)

Report of the Committee (Mr. W. J. Serrill, Chairman), on Utilization of Gas Appliances, Submitted at the Seventh Meeting, American Gas Institute.

EXHIBIT D.--IGNITION OF WOOL, COTTON, ETC., FROM HOT GLASSWARE AND BROKEN MANTLES.

Test Made at the Photometrical Laboratory of the United Gas Improvement Company, Philadelphia.—The purpose of this test was to determine whether certain very inflammable materials would catch fire if pieces of hot glassware or mantles from (1), a 3-burner inverted indoor arc lamp; (2), a 4-burner, inverted, indoor arc lamp; or (3), a standard inverted lamp should fall on them.

The materials tested were six in number, namely: (1), Raw cotton; (2), jute manufactured from cotton bagging; (3), wool waste or fleece; (4), wool in raw state; (5), cotton fleece; and (6), oily waste.

Before dropping the glassware and mantles on the materials a preliminary test was made in which a sample of each material was held against the glassware of 3 lamps, opposite the mantles, for one minute, and the results noted. These observations were as follows:

(1) *Raw Cotton:*
- (a) Three-burner inverted indoor arc lamp. No fire or charring.
- (b) Four-burner inverted indoor arc lamp. Charring with slight smoking, but no ignition.
- (c) Standard inverted. Started to smoulder after about 30 seconds, and glowed for some time; afterward accompanied by a great deal of smoke. Material did not burn at all with a flame.
- (d) Material lighted with a *match* burned with a *flame.*

(2) *Jute:*
- (a) Three-burner inverted indoor arc lamp. Material charred and smoked a little, but there was no flame.
- (b) Four-burner inverted indoor arc lamp. Charred and smoked badly, but no flame.
- (c) Standard inverted. Took fire and simply smouldered, accompanied by much smoke; no flame.
- (d) Material lighted with a match, burned with a flame.

(3) *Wool Waste:*
- (a) Three-burner inverted indoor arc lamp. Charred and smoked badly; worse than 1 and 2, but did not ignite and burn with flame.
- (b) Four-burner inverted indoor arc lamp. Same as above, but heat more intense.
- (c) Standard inverted. Started to smoulder almost immediately and burned to a sticky black carbon substance which adhered to the glass. There was some smoke but no flame.
- (d) Material lighted with a match burned very rapidly with a flame.

(4) *Wool in Raw State:*
- (a) Three-burner inverted indoor arc lamp. This material charred worst of them all. The ends curled up and material disintegrated, but there was very little smoke and no flame.
- (b) Four-burner inverted indoor arc lamp. Same as above but more intense.
- (c) Standard inverted. Material immediately burned to a sticky carbon on the glass: little smoke and no flame.
- (d) Material lighted with a match did not flame and went out when lighted match was removed.

(5) *Cotton Fleece:*
- (a) Three-burner inverted indoor arc lamp. Did not charr or smoke.
- (b) Four-burner inverted arc lamp. Charred slightly, but there was no smoke or flame.
- (c) Standard inverted. Charred slowly, with plenty of smoke, but no flame. The action was very mild.
- (d) Material lighted with a match burned rapidly with a flame.

(6) *Oily Waste:*
- (a) Three-burner inverted indoor arc lamp. Slight smoking, but no charring or igniting.

(b) Four-burner inverted indoor arc lamp. Same as above. Accompanied by a crackling sound.

(c) Standard inverted. Charred slowly with lots of smoke, but no flame. Action was slow.

(d) Material lighted with a match burned rapidly with a flame and great volume of smoke. The action continued for a long time.

In this test and the next, opal globes were used on the arc lamp and a clear cylinder on the inverted lamp. The temperatures on the glassware opposite the mantles were as follows:

	Degs. F.
(A) 3-burner inverted indoor arc lamp.....	240
(B) 4-burner inverted indoor arc lamp.....	280
(C) Standard inverted.....	450

This gives a clew to the effect of various temperatures on these materials. The next test conducted consisted in dropping hot glassware, mantle ash and mantle ring through a distance of 5 feet on to the various materials. The results of this test were as follows:

(1) *Raw Cotton:*

Not ignited or affected at all by falling glassware or mantle ash. Where the mantle ring lay on the material there was a char, but this did not spread and there was no smoke or flame. This material seemed perfectly safe.

(2) *Jute:*

Glassware and mantle ash hardly affected this material, but the falling mantle ring caused a sudden and immediate ignition. The flames spread rapidly, so that the material was all burned up in little over a minute. The flames were bright, and very little smoke accompanied the combustion.

(3) *Wool Waste:*

Falling glassware caused a very slight charring. Mantle ash and ring caused charring, smouldering and slight flaming of fibrous ends. The fire went out of itself in a few seconds, as the fallen material cooled and very little charring resulted.

(4) *Wool in Raw State:*

Unaffected in any way by falling glassware, mantle ash, mantle ring or cylinder ring. The fibrous ends of the wool were just as white under the fallen material as they were before. This material seemed perfectly safe under the conditions of the test.

(5) *Cotton Fleece*:

The glassware and mantle ash caused no change in this material; the mantle ring caused a glowing in the portions of the cotton where it landed. This spread very slowly to the adjoining portions of the material. Although the action was mild it was very hard to extinguish, the glowing starting up again, even after it had, to all appearances, been smothered out.

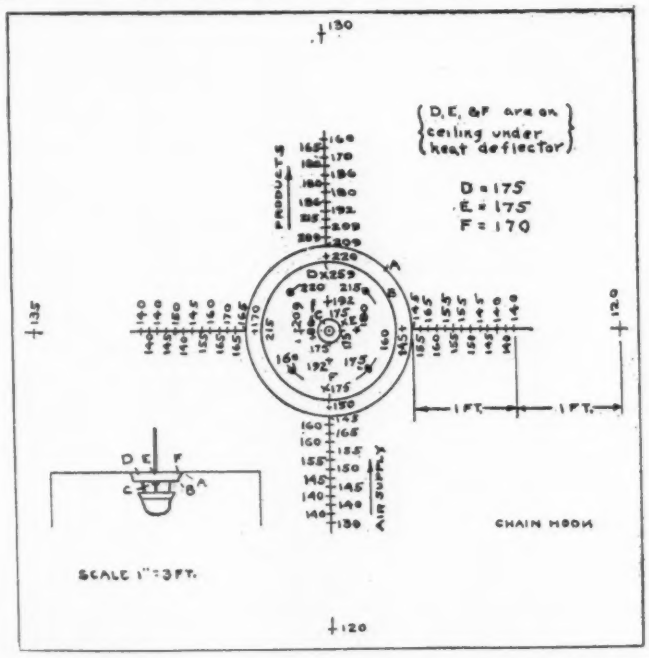
(6) *Oily Waste:*

Glassware and mantle ash had no effect on this material. The mantle ring caused a slight charring, with considerable smoke just where it landed, but this did not spread at all and ceased smoking altogether.

In these tests of falling glassware the globes of the arc lamps caused practically the same effects as the inverted cylinder. Although the inverted glassware was much hotter initially, it was much thinner than the arc lamp globes and, therefore, did not retain its heat so long. It should be stated that the materials tested were loosened up considerably by pulling, so they would present a lot of fibrous ends to the hot materials, instead of being in a compact form. It will be noticed from this test that the glassware and mantle ash caused very little damage. The hot mantle ring caused some charring. The tests of falling mantle ash and ring were made from an inverted lamp only, as there should be no difference between this and the arc lamp mantles. The room temperature during the test was 90° F.

Exhibit E.—Distribution of Temperature above Various Forms of Gas Lamps.

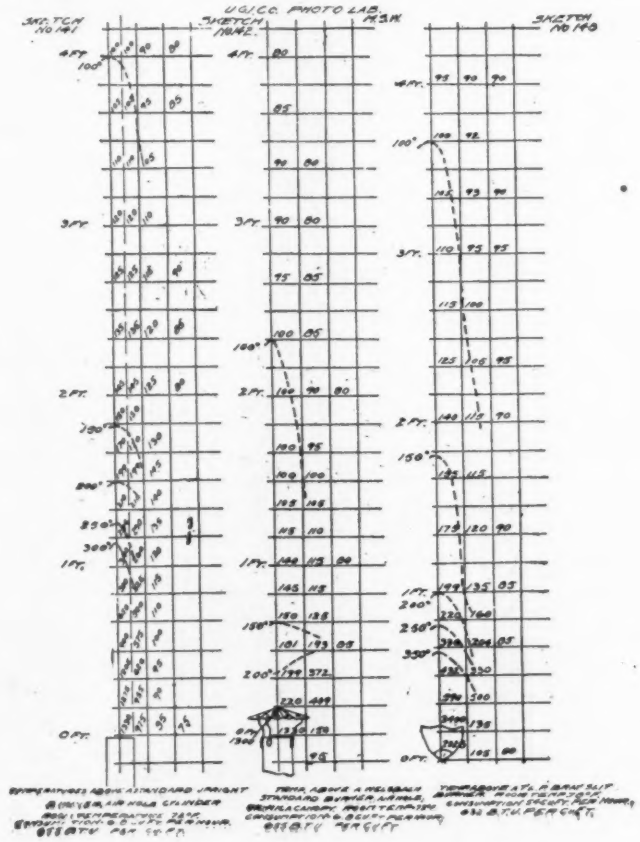
Test Made at the Photometrical Laboratory of The United Gas Improvement Company, Philadelphia.—In order to determine safe ceiling distances, height of sprinklers, distance from walls, awnings, curtains, etc., it is convenient to know the temperatures of the hot products at various distances above a gas burner or gas arc lamp. If temperature curves could be plotted, much as candle power or light distribution curves are, we would have a very convenient form in which to represent the quantity of heat emanating from a given lamp. One method of doing this is shown in the accompanying plates which give the actual temperatures in degrees Fahrenheit above three forms of inverted lamps. In the several plates the intersecting lines mark off points in space 2 inches apart, and the temperatures given in the squares refer to the points in the lower left-hand corners. The figures "1 foot," "2 feet," etc., at the left, are for convenience in determining the distance of the lines from the top of the lamp. The dotted lines are isotherms, or lines of equal temperatures, and these are given for 100°, 125°, 150°, 200° and 250°, respectively. They help to show the course of the hot gases above the lamp, and mark off the heat zones very definitely.



Ceiling Temperatures above a Cluster—5-Burner Lamp—Room Temperature 80° (Consumption, 17.3 Cubic Feet per Hour 62 9 B T. U. per Cubic Foot)—Sketch No. 147.

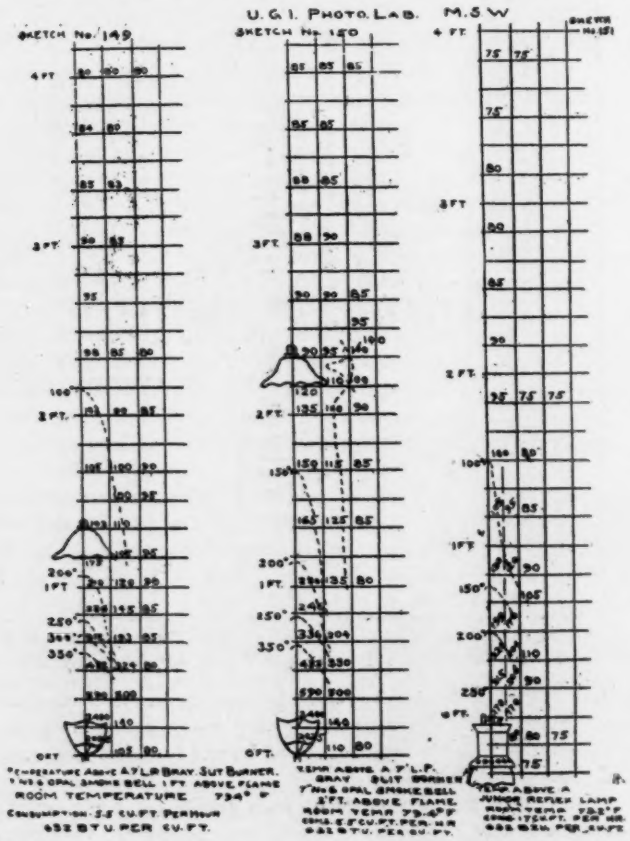
A few remarks as to how these temperatures were obtained are deemed important. The instrument used was a pyrometer, having 2 thermo-couples, one for temperatures and one for high temperatures; namely, those above 500° F.

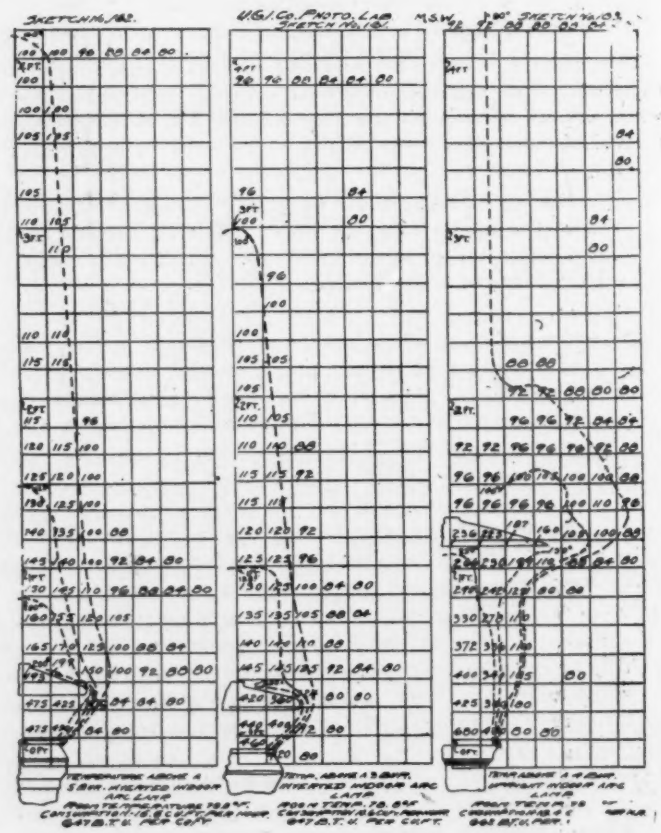
The lamp to be tested was set up in a good-sized room, which was closed up and kept as free from draughts as possible. This room had

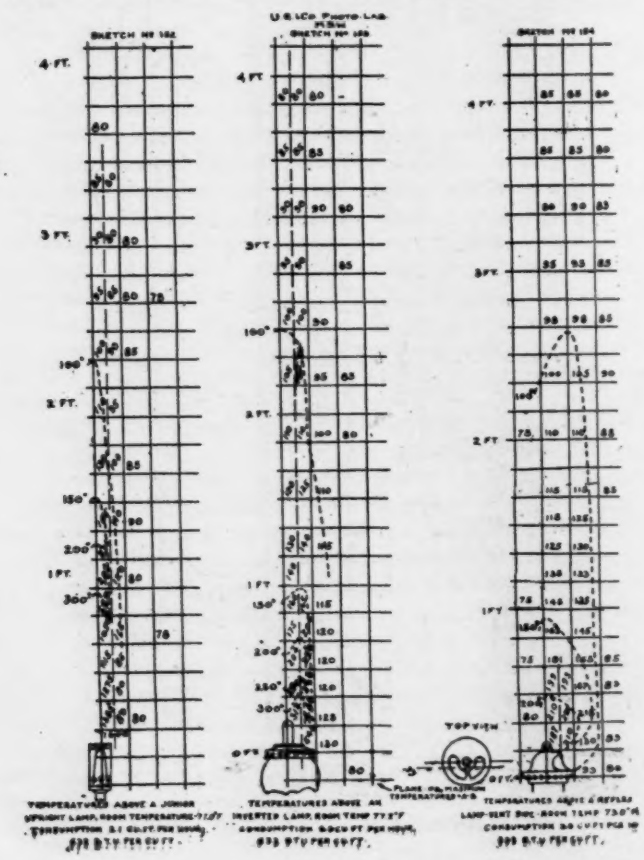


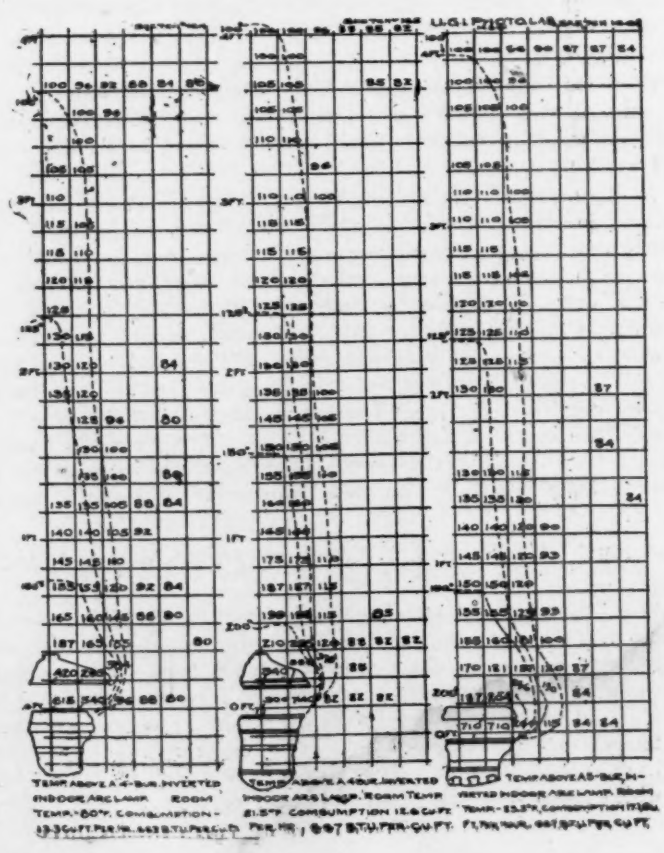
a high ceiling, so that the hot gases were allowed to rise straight up unmolested. A screen of fine wire, having a 2-inch mesh, was used for locating the points above the smaller lamps, and a long pointer, travelling up-and-down a graduated standard, was used for the larger lamps and heat bafflers.

Having thus explained the scheme of laying out the temperatures and the method of obtaining them, the question naturally arises: "What change in the temperature at any given height above the lamp would be caused by the introduction of a ceiling at that height?" The answer, which was determined experimentally, is that the maximum temperature would be slightly reduced. There seems two principal reasons for this, the most important of which is that the ceiling causes a spreading out of the hot gases, causing them to take an umbrella shape at the top instead of that of a narrow column. This is shown in Sketch No. 174—semi-indirect fixture in the right-hand figure. The result of this spreading out process is that the outer temperatures are slightly increased, but the inner one, which is the maximum, is decreased. In other words, there is a tendency to even up the temperatures, so that the maximum values given on these plates are actually higher than they would be if the ceiling were introduced at any of these places. An exception occurs when the gases have already been spread out by a large deflector. The second


SKETCH No. 149
U. G. I. PHOTO. LAB.
SKETCH No. 150
M. S. W.
SKETCH No. 151
TEMPERATURE ABOVE A 7 L.P. BRAY SLIT BURNER, 1 IN. OPAL SMOKE BELL 1 FT. ABOVE FLAME
ROOM TEMPERATURE 73.4° F
CONSUMPTION - 5.5 CU. FT. PER HOUR
632 B.T.U. PER CU. FT.
TEMP. ABOVE A 7" L.P. BRAY SLIT BURNER
7 IN. OPAL SMOKE BELL
2 FT. ABOVE FLAME.
ROOM TEMP. 73.4° F
CONS. 5.5 CU. FT. PER HR.
632 B.T.U. PER CU. FT.
TEMP. ABOVE A JUNIOR REFLEX LAMP
ROOM TEMP. 73.2° F
CONS. 1 CU. FT. PER HR.
632 B.T.U. PER CU. FT.


SKETCH No. 182.
U.G.I. Co. PHOTO. LAB.
SKETCH No. 183.
M.S.W.
SKETCH No. 184.
TEMPERATURES ABOVE A 5 BR. INVERTED INDOOR ARC LAMP
FROM THE ATMOSPHERE 73.8° F.
CONSUMPTION 5.5 CU. FT. PER HOUR
647 B.T.U. PER CU. FT.
TEMP. ABOVE A 5 BR. INVERTED INDOOR ARC LAMP
ROOM TEMP. 78.6° F.
CONSUMPTION 5.5 CU. FT. PER HOUR
647 B.T.U. PER CU. FT.
TEMP. ABOVE A 4 BR. UPRIGHT INDOOR ARC LAMP


SKETCH No. 182
U.G.I. PHOTO. LAB.
SKETCH No. 183
M.S.W.
SKETCH No. 184
TEMPERATURES ABOVE A JUNIOR UPRIGHT LAMP, ROOM TEMPERATURE 71.6° F
CONSUMPTION 5.1 CU. FT. PER HOUR.
878 B.T.U. PER CU. FT.
TEMPERATURES ABOVE AN INVERTED LAMP, ROOM TEMP 77.5° F
CONSUMPTION 4.9 CU. FT. PER HOUR.
933 B.T.U. PER CU. FT.
TOP VIEW
FLAME OR MANTLE TEMPERATURES
TEMPERATURES ABOVE A REFLEX LAMP SENT 300 ROOM TEMP 73.0° F
CONSUMPTION 3.0 CU. FT. PER HR.
999 B.T.U. PER CU. FT.

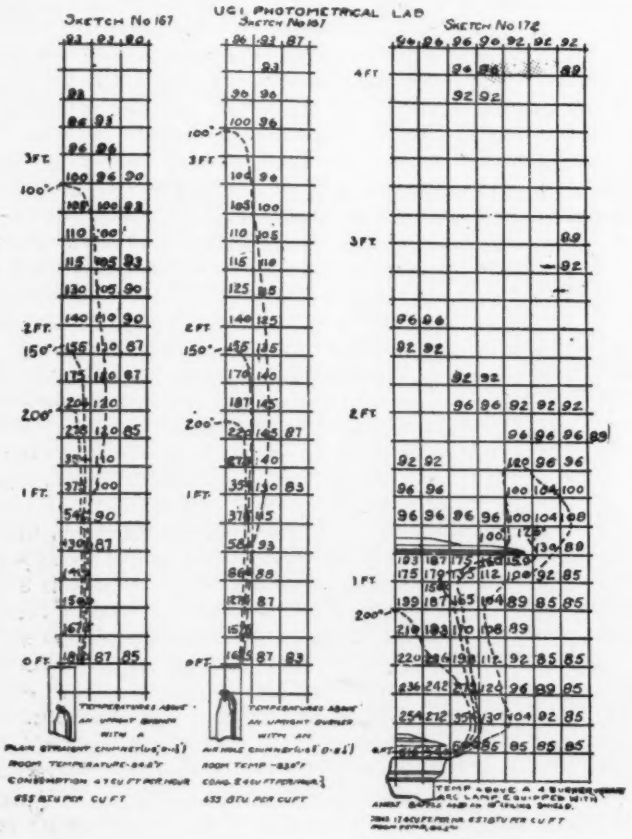

TEMP. ABOVE A 4 BR. INVERTED INDOOR ARC LAMP. ROOM TEMP. 80°F. CONSUMPTION - 13.3 CU. FT. PER HR. 663 B.T.U. PER CU. FT.
TEMP. ABOVE A 4 BR. INVERTED INDOOR ARC LAMP. ROOM TEMP 81.5°F. CONSUMPTION 12.6 CU. FT. PER HR. ; 667 B.T.U. PER CU. FT.
TEMP. ABOVE A 5 BR. INVERTED INDOOR ARC LAMP. ROOM TEMP - 83.5°F. CONSUMPTION 17.1 CU. FT. PER HOUR. 667 B.T.U. PER CU. FT.

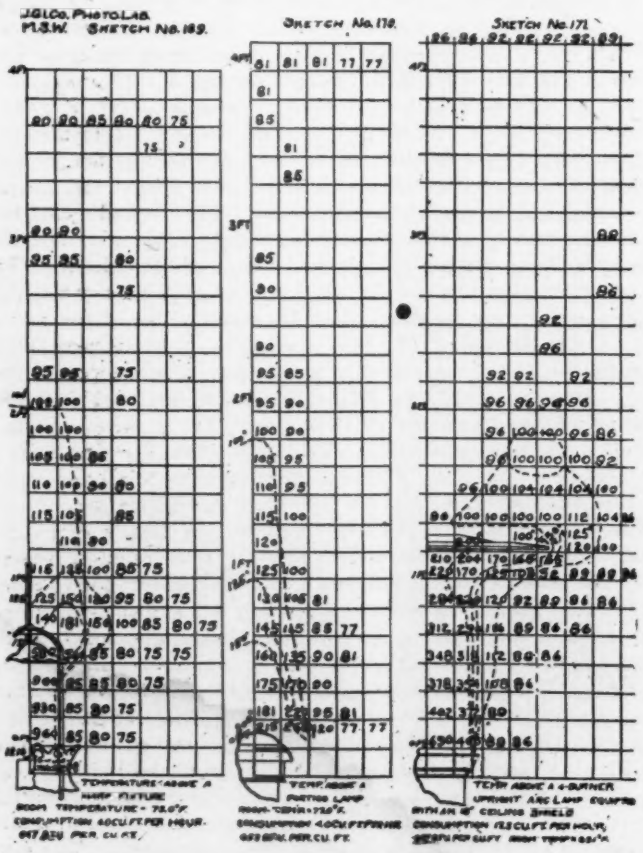
reason which may be assigned to this phenomenon is that the introduction of a ceiling near the lamp reduces the draft considerably and has a crushing down effect on the gases. That is, the velocity of the products being reduced, they have time to give up more of their heat to the surrounding air before reaching the specified heat, causing a reduction of temperature.

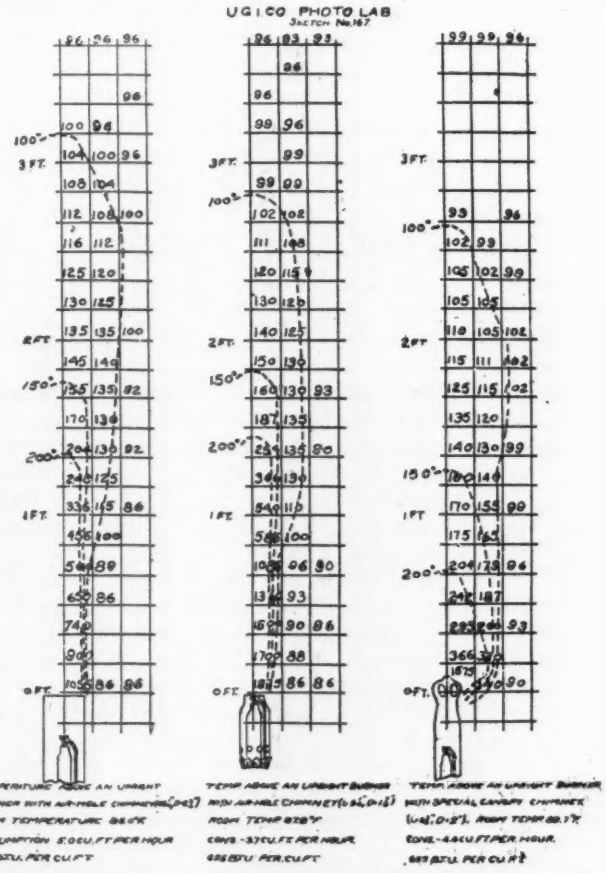
It might be inferred from this explanation that the reduction of the maximum temperature, due to the introduction of a ceiling, would be considerable. This, however, would be a false inference, as experiments show that the difference is very slight. There seems to be a counteracting influence which tends to raise the temperature; namely, the cumulative action of the ceiling. The hot products are bent approximately at right angles to their original course, causing a considerable loss in velocity, and this lingering of the hot gases causes an increase in temperature.

These phenomena apparently counteract each other in such a way that the result is merely a slight reduction of the maximum temperatures given on the plates, the amount of reduction increasing as the ceiling is brought nearer to the lamp. This has been proven repeatedly in connection with this test. By placing a ceiling at 8, 16 and 24 inches respectively, above an upright burner with air hole chimney, and comparing the temperature charts thus obtained with that for no ceiling, a remarkable similarity was discovered. Therefore, it may be claimed that the value shown in these sketches, where no ceilings have been used, are fair values to use in determining safe ceiling distances above these lamps.

One other point is on the side of safety. These temperatures were taken in a room practically free from draughts, whereas, in ordinary practice, there are many draughts in a room, due to open doors, windows, ventilators, heaters, etc., and these draughts, by scattering the hot gases, or blowing them aside from their straight upward


SKETCH No 167
UGI PHOTOMETRICAL LAB
SKETCH No 172
TEMPERATURES ABOVE AN UPRIGHT BURNER WITH A PLAIN STRAIGHT CHIMNEY (0-8")
ROOM TEMPERATURE-84.6°F
CONSUMPTION 4.7 CU FT PER HOUR
655 BTU PER CU FT
TEMPERATURES ABOVE AN UPRIGHT BURNER WITH AN AIR HOLE CHIMNEY (0-8")
ROOM TEMP -83.6°F
CONS. 5 CU FT PER HOUR
655 BTU PER CU FT
TEMP ABOVE A 4 BURNER ARC LAMP EQUIPPED WITH


J.G.I.Co. PHOTO LAB
M.S.W. SKETCH No. 169
SKETCH No. 170
SKETCH No. 171
TEMPERATURES ABOVE A MANTLE FIXTURE
ROOM TEMPERATURE - 72.0°F
CONSUMPTION 4.0 CU FT PER HOUR
647 BTU PER CU FT.
TEMP ABOVE A PORTICO LAMP
ROOM TEMP - 73.6°F.
CONSUMPTION 4.0 CU FT PER HR.
653 BTU PER CU FT.
TEMP ABOVE A 4-BURNER UPRIGHT ARC LAMP EQUIPPED WITH AN 18" CEILING SHIELD
CONSUMPTION 17.3 CU FT PER HOUR.
653 BTU PER CU FT

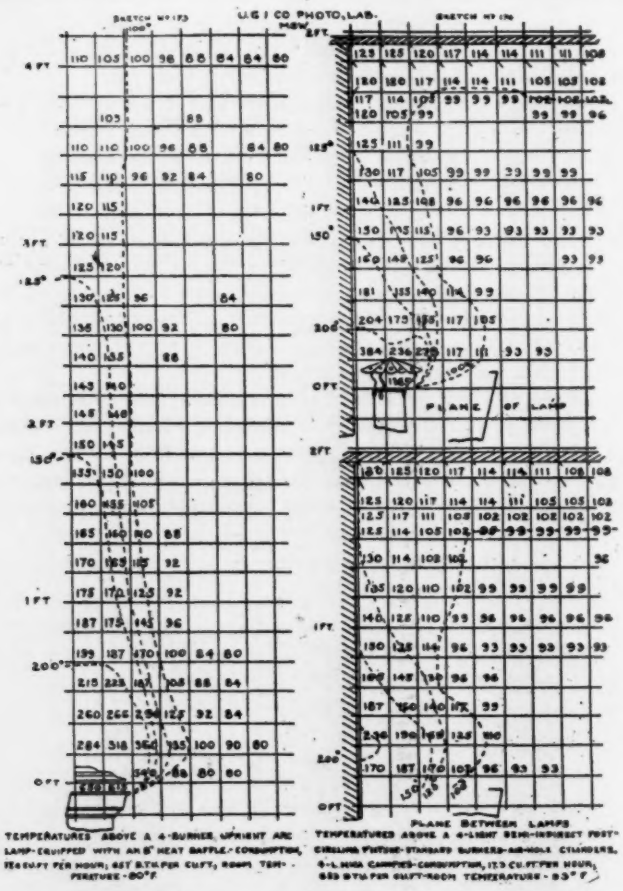

UGI CO PHOTO LAB
SKETCH No. 147
TEMPERATURE ABOVE AN UPRIGHT BURNER WITH AIR HOLE CHIMNEY (0-8")
ROOM TEMPERATURE 84.6°F
CONSUMPTION 5.0 CU. FT. PER HOUR
655 BTU. PER CU FT
TEMP ABOVE AN UPRIGHT BURNER WITH AIR HOLE CHIMNEY (0-8")
ROOM TEMP 87.6°F
CONS. - 5 CU FT PER HOUR.
655 BTU PER CU FT
TEMP ABOVE AN UPRIGHT BURNER WITH SPECIAL CANOPY CHIMNEY (0-8"). ROOM TEMP 88.7°F
CONS. - 4.4 CU FT PER HOUR.
653 BTU. PER CU FT

course, would cause a reduction in the maximum temperature at the ceiling. Sketches for several kinds of lamps will be shown, and the relative merits of these lamps, from a temperature standpoint, wil l be discussed.

Sketches Nos. 148, 149 and 150 show an open flame burner, with and without a 7-inch opal, smoke bell; 148 we may consider as having an infinite ceiling; 150 has the bell 2 feet above the flame and 149 one foot above it. The 100° isotherm has been brought down a distance of 16 inches with the bell at 2 feet and 18 inches with it a 1 foot. There seems a slight advantage in having the bell at the lower position, probably because more of the hot products are deflected; but the difference is so slight as to make it unimportant at which height the bell is hung.

Sketches Nos. 141, 142 and 152 show charts for "Standard" and "Junior uprights." They show what very straight and upward courses the hot gases take. There is a slight spreading out of the products at the top, due to the loss of velocity, but they first come very near to the temperature of the room. The reason for the curves being higher above the lamp in the case of the standard burner (Sketch No. 141) is that there is a greater volume of hot gases to ascend, and these offer more heat for the surrounding air to equalize.

The mica canopy (Sketch No. 142) is very efficient, causing a drop of 20 inches in the 100° isotherm and 12 inches in the 200° isotherm. It also causes a change in the direction of the lower curves. It is in-


TEMPERATURES ABOVE A 4-BURNER UPRIGHT ARC LAMP-EQUIPPED WITH AN 8" HEAT BAFFLE-CONSUMPTION, 78 CU.FT. PER HOUR; 657 B.T.U. PER CU.FT.; ROOM TEMPERATURE - 80°F.
TEMPERATURES ABOVE A 4-LIGHT SEMI-INDIRECT POST-CEILING FIXTURE-STANDARD BURNER-AIR-HOLE CHIMNEYS, 4-1/4 NOVA CANDLES-CONSUMPTION, 173 CU.FT. PER HOUR; 653 B.T.U. PER CU.FT.-ROOM TEMPERATURE - 83°F.
PLANE BETWEEN LAMPS
PLANE OF LAMP

teresting to note how quickly the deflected products come back to the center again, even though they have lost a part of their heat.

Sketches Nos. 164, 165 and 166 show temperatures above two, 4-burner, inverted indoor arc lamps of different styles (164-165) and a 5-burner, inverted, indoor arc lamp (166). These were equipped with their respective heat bafflers and show a marked similarity in shape and height of isotherms. The arc No. 165 has the lowest consumption of the three, and yet its isotherms all reach greater heights than those of the other lamps, this being due, no doubt, to the construction of the lamp stack. It will be noticed that the 5-burner lamp (166) has a wider column of hot gases than the 4-burner lamp, although its isotherms do not reach any greater height.

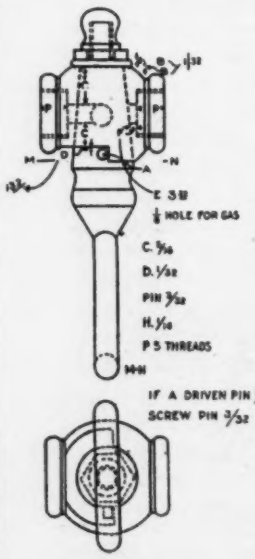
Sketches Nos. 161, 162 and 163 show curves for three (161) and five (162) burner inverted indoor arcs with heat bafflers, and a (163) 4-burner upright, having no baffler, but a 14-inch ceiling shield placed 14 inches above the lamp. The 3 and 5-burner lamps compare nicely, and show how closely the hot gases stick to the bafflers in their course of deflection.

Although the lamp No. 163 is developing much more heat than either of the other two, the 100° isotherm is the hottest one that gets above the ceiling shield, and it is 30 inches below that of the 5-burner, No. 162, and 16 inches below that of the 3-burner, No. 161, which is burning a little over ¼ as much gas. The 90° isotherm is put in to emphasize the tendency of the hot products to get back to the center again after leaving the edges of the bell. It would seem as though the ceiling shield were vastly more efficient than a heat baffler in reducing the temperature of the heat gases.

Sketches Nos. 171, 172, 173 prove that it is. This shows a 4-burner upright arc lamp, equipped with a heat baffler only (173), and 18-inch ceiling shield only (171), and a heat baffler and ceiling shield together (172). The lamp was burning under the same conditions in all three cases. In sketch 173, that for the heat baffler only, the 100° isotherm runs off the chart at the top, while the 125° line runs almost to 3 feet. In the other two sketches we find that the use of the 18-inch ceiling shield, 14 inches above the top of the lamp, brings all these curves down below 2 feet, and that no temperature above 125° is recorded above the shield. It makes comparatively little difference whether a heat baffler is used or not, when there is a ceiling shield, but there is enough difference to warrant the use of both baffler and shield when the lamp is close to the ceiling.

It is interesting to note the swirling course of the hot gases above the ceiling shield, as shown by the 100° isotherms. This sketch leads to the conclusion that a large plate, high above the lamp, is better than a small baffler close to it, although the small baffler is, of course, better than none at all.

Sketch No. 147 shows a somewhat different scheme from that which has been used hitherto, and was found necessary in order to represent the temperature conditions above a 5-burner cluster lamp. The lamp was fitted up under a 6-foot square ceiling, from the sides of which heavy building paper was hung for a distance of 18 inches to give the effect of walls of a room and thus inclose the hot, spent gases. The sketch proper is a plan view of lamp and ceiling, looking upward, and the temperatures are shown in their relative positions on the ceiling plate and ceiling. The lamp is of peculiar construction, the air supply entering from one side the hot gases being carried out the other. This accounts for the temperatures being greater on one side than on the other. It will be noticed that the highest temperature does not come right at the junction of the ceiling and the plate, but 2 or 3 inches from it, this being due to the fact that the gases are thrown out a little way by the sharp edge of the ceiling plate. This plate, it will be seen, forms a dead-air space with the ceiling, and it was desired to determine whether the temperature of the air was greater under this plate than at its sides, causing the ceiling to char or ignite under the plate first. Accordingly, three holes were bored through the top of the ceiling and corked up in such a way as to keep the compartment air-tight, and yet permit of the thermo-couple being introduced. These positions are shown at *D*, *e* and *F*, and the temperatures were all found below the maximum temperature on the ceiling outside, showing that, for this particular lamp, such a ceiling plate is perfectly safe (see Sketch). However, it must not be supposed from this that all such air-traps will be cooler than the surrounding ceiling. To show this an 8-inch shallow bell was fastened against the ceiling, forming a dead-air space, and an upright burner placed not far below it. The maximum temperature on the ceiling around the plate was 200°, that within the air space 250°, that on the surface of the plate 350°. This is explained merely as a caution. A safe rule to go by is to figure the allowable temperature as below that of the maximum temperature on the plate.



Returning again to our original method of representing temperatures above a lamp, we find (Sketch No. 167) the curves above a standard upright burner, equipped with 5 different styles of glass chimneys. The first is a plain chimney; second, a medium air-hole chimney; third, a large, air-hole chimney; fourth, a small, air-hole chimney; the fifth, a special canopy top-chimney. The first four conditions bear a very decided resemblance to one another, and the isotherms reach very nearly the same height. Of course, the column of hot gases is wider in the case of the large air-hole chimney, because the diameter of the chimney is greater. This also accounts for the lower temperature (105°) just at the top of the chimney. This zero line of temperature is a clue to the kind of chimney used, the greatest one being for the short, air hole, with the top of the mantle near the top of the chimney. Next comes the plain, narrow, chimney; then the wider, air-hole one; and so on. The canopy chimney causes a drop in the 150° and 200° isotherms, which might be an important advantage when used close to a ceiling.

The main point brought out by Sketch No. 167 is the similarity of result obtained with these different chimneys, especially above the 1-foot line distance, in spite of the fact that the different conditions required different rates of gas consumption. In fact, a careful investigation was made to establish, if possible, some relation between the temperatures above a given lamp and its consumption; but in vain. Within limits of probable adjustment for a standard upright burner it was found that the temperatures above the lamp did not vary appreciably for these different consumptions, so it seems fair to conclude that the values shown on these plates may be used without applying any corrections for the consumption of the lamp.

Sketch No. 176 gives a table of these temperatures, classified in such a way that the various lamps tested may be compared with one another. The name of the lamp, kind of heat baffler, room temperature and heat input in B.T.U.'s per hour are given. Then follows a table of the heights above the lamps of the different isotherms. This gives

Comparison of Temperatures Above Various Gas Lamps.

No.	Name of Lamp.	Bells, etc.	Room Temp. Degs. F.	Heat Input, B.T.U. Hours.	Height of Isotherms above Lamp (Inches). 100°	125°	150°	200°	250°	Comparison Factor, Inches per B-T.U. × 1,000. 100°	125°	150°	200°	250°
1	Junior upright	None.	77	1,327	27	20	17	14	13	20.3	15.1	12.8	10.5	9.8
2	Junior inverted	None.	73	1,075	18	11	9	6	3	16.8	10.2	8.4	5.6	2.8
3	Inverted	None.	77	2,085	30	18	12	8	5	14.4	8.6	5.8	3.8	2.4
4	Standard inverted	None.	73	2,275	32	18	11	6	..	14.1	7.9	4.8	2.6	..
5	7′ L. P. Bray slit burner	None.	78	3,410	44	28	22	12	10	12.9	8.2	6.4	3.5	2.9
	7′ L. P. smoke bell, 2 feet	Bell.	79	3,475	29	26	20	14	10	8.3	7.5	5.8	4.0	2.9
	7′ L. P. smoke bell, 1 foot	Bell.	79	3,475	26	..	.	13	10	7.5	..	..	3.7	2.9
6	Standard upright	None.	72	4,454	48	32	22	18	15	10.8	7.2	4.9	4.0	3.4
	Standard upright, with canopy	Canopy.	72	4,454	28	13	8	6	..	6.3	2.9	1.80	1.35	..
7	Portico	None.	77	2,610	21	11	6	2	..	8.0	4.2	2.3	0.77	..
8	Harp fixture	Bell.	73	3,880	24	12	10	..	..	6.2	3.1	2.6	..	..
9	Arc, 4-burner inverted	Baffle.	82	8,410	50	28	18	6	..	5.9	3.3	2.14	0.71	..
10	Arc, 4-burner inverted	Baffle.	80	8,800	44	28	9	..	..	5.0	3.2	1.02	..	..
11	Arc, 3-burner inverted	Baffle.	79	6,860	36	12	5	5	..	5.2	1.75	0.73	0.73	..
12	Arc, 5 burner inverted	Baffle.	79	10,740	50	18	10	5	..	4.7	1.68	0.93	0.47	..
13	Arc, 5-burner inverted	Baffle.	83	11,400	48	28	10	3	..	4.2	2.5	0.88	0.26	..
14	Arc, 4-burner upright	14″ shield.	79	12,180	19	..	13	..	13	1.56	..	1.07	..	1.07
A	Standard upright airhole chimney	None.	88	2,420	34	27	22	17	16	14.0	11.2	9.1	7.0	6.6
B	Standard upright airhole chimney	None.	86	3,270	38	28	21	16	14	11.6	8.6	6.4	4.9	4.3
C	Standard upright plain chimney	None.	84	3,080	34	27	22	18	17	11.0	8.8	7.1	5.8	5.5
D	Standard upright airhole chimney	None.	83	3,540	38	26	22	17	15	10.7	7.3	6.2	4.8	4.2
E	Standard upright canopy chimney	None.	89	2,880	32	20	15	8	5	11.1	7.0	5.2	2.8	1.7
X	Arc lamp, 4-burner upright	Baffle.	80	11,440	56	34	22	8	5	4.9	3.0	1.9	0.70	0.44
Y	Arc lamp, 4 burner upright	18″ shield.	85	11,370	23	15	14	14	11	2.0	1.3	1.2	1.2	0.97
Z	Arc lamp, 4-burner upright	BF and shield	84	11,440	20	15	14	10	5	1.7	1.3	1.2	0.87	0.44

a means of comparing the lamps according to their actual temperatures, regardless of their consumptions. But it was desired to find a factor which would give a key to the actual construction of the lamp in relation to its behavior about temperatures, so an arbitrary unit of comparison was chosen. This is the inches height of the isotherms, per B.T.U. input, multiplied by 1,000 for convenience, and these comparison factors are recorded in the last part of the table. They show that the small Junior lights send their heat higher in proportion to the amount of heat supplied than any of the others. Next come the inverted lights, then the uprights, finally the arc lamps. They naturally arrange themselves somewhat in the order of their consumption; but not entirely so, as shown in several places in the column marked heat input. For instance, the "Portico" lamp is considerably out-of-place, as one would expect from its construction. It will be noted that the arc lamps, equipped with bafflers and ceiling shields, do not give any more trouble than the smaller lamps without such appliances. In closing it may be said that these tests lead to several conclusions regarding heat bafflers, etc., as follows:

(1) The diameter of the baffler is more important than its distance from the lamp, owing to the straight upward course of the hot gases

(2) The hot gases follow the outline of the baffler very closely and always tend to rush toward the center again when once deflected.

(3) A test was made to determine whether the baffler should be hung in the regular canopy position, or the reverse of this; but it was found to make no great difference. In the case of a baffler in a canopy position the products were not spread out quite as far as they were with it in the reverse position, but the temperatures above were slightly lower in the former than in the latter position, giving it a slight preference.

(4) Future investigations may show that one form or shape of baffler is better than another.

(5) The temperatures above a baffler are due mostly to the course of the hot gases, as they are deflected by the baffler, and only a slight extent by the heat radiated from the baffler itself, so that it should make comparatively little difference what color the baffler is painted, or of what material it is made.

(6) Any wall or post placed near the hot gases will close those gases to be deflected in its direction.

The temperature curves herewith should be of practical value in determining safe ceiling distances for these lights.

EXHIBIT F.—PROPOSED SPECIFICATIONS FOR GAS FIXTURES.

General.—Gas fixtures should be of such mechanical construction that proper installation, operation und maintenance will be assured without encountering any special difficulty. Care should be exercised in the design of the fixture, so that no portion of it interferes with ready access to any nut or screw, which it may be necessary to get at for purpose of adjustment. Brass pipe or tubing should be either seamless drawn, or brazed; in either case of best quality, to allow bending and threading without splitting. The thickness of walls of brass pipe or tubing should be not less than No. 17 B. & S. gauge (0.04525 inch) except when it is used as casing or covering for iron pipe, in which case it may be not less than No. 22 B. & S. gauge (0.02534 inch). Iron pipe should be of the American standard size.

No. 1 Sizes of Threads:

(A) All threads on brass tubing should be straight threads, of the size commonly known to the trade as "gas fixture" or "brass pipe" size, and should have, for all sizes of ¼-inch and over, 27 threads to the inch. If less than ¼-inch, the threads are to be 32 to the inch.

(B) All pipe threads for iron pipe should be the standard iron pipe size. (Briggs' standard.)

(C) When brass and iron are connected the thread should be iron pipe size (Briggs' standard), and when such a thread is cut on brass tubing, this tubing should be of sufficiently heavy wall to permit cutting a full thread.

No. 2 Assembling Requirements:

(A) All joints of stem, body arms, cocks, nozzle, or the like, to be threaded. No joints should depend on soldering or brazing to hold the parts together.

(B) The threaded portion of pendant body, or manifold, for fixture stem to be of such a depth that in no case will the stem come in contact with the arms. The pendant body should be threaded for at least 5 full threads, both for the stem and arms.

(C) Fixture arms should not extend into the pendant body, or manifold, for a greater distance than the threaded portion of the manifold.

(D) If the arms of the pendant are straight, then the pendant body, or manifold, should be drilled in such a way that the arms will be perpendicular to the stem.

(E) The burner nozzle, or nipple, to have a ⅛-inch straight iron pipe, male thread. The length of this threaded portion should be not less than $\frac{9}{32}$-inch and not more than $\frac{11}{32}$--inch, and the bottom of the thread should be recessed so that the burner will make a neat, tight joint with the finished end of the arm immediately before the threaded portion.

(F) The axes of the burner nozzles should be vertical.

(G) Special precautions should be taken in the construction to prevent the obstruction of the gas-ways by foreign matter, such as gas fitters' cement, solder, or other jointing material, or metal chips. The ends of tubing should be reamed to remove burrs. When duplex tubing is used, care should be exercised to prevent faulty alignment of the gas-ways.

(H) Gasfitters' cement should not be used on any part of the fixture where it may be affected by the heat from the burners. When solder is used, it should be of such a mixture that it will not be affected by the heat from the burners.

(I) Fixtures for use out-of-doors, or in exposed situations, should be provided with suitable drips, or means for the convenient removal of condensation from any part of the fixture in which such condensation may accumulate. Independent pilot lines in outdoor fixtures should not be smaller than ⅛-inch iron pipe size.

(J) Globe-holders should be of such construction and weight that

(*Continued on page* 410.)

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NEW YORK, MONDAY, DECEMBER 23, 1912.

BRIEFLY TOLD.

A Typical High Class American.—Whatever may be vented volubly from the mouths of unthinking speakers, respecting the oppressions of monied trusts, and regarding the personnel of the financiers said to be engaged from time to time in active exhibition of such repression, it may not be truthfully denied that at least one of the "oppressors" (Mr. J. P. Morgan) seems to emerge from each "examination"—be the examiners representative of the United States, or of any single State, or of any public body connected with State, city, town or village—at least as clean as any of his "examiners." Mr. Morgan, to the mind of the average healthy American citizen, from his course in religious, business, State, civic or social affairs, is an honor to the Nation to which he yields an allegiance not second to that of any other subscribing member.

Winter Meeting, New Jersey State Gas Association.—Short one-day conventions have been proven a successful method of getting out the members and holding their attention by the New Jersey State Gas Association, for at its Winter Meeting, held Wednesday, the 18th inst., at Achtel Stetter's Hall, Newark, there were over 150 members and guests in attendance. Shortly after 2 P.M. President Pettes, assisted by Secretary Osborn, put through the routine business in quick order, whereupon Mr. L. R. Dutton, Vice-President and Chairman of the Publicity Committee, Pennsylvania Gas Association, presented a tentative plan for increasing the use of gas in the home by means of closer co-operation between the companies and architects, plumbers, builders and owners. Mr. Dutton detailed some of the various methods of advertising in vogue, and showed how many of these could be applied to the gas business. It is a certainty that his conclusions were much more understandable and of much greater value in practical application than the conclusions generally expressed by innumerable "advertising experts." If any of latter were in attendance they were not in evidence, as practically all of the speakers agreed with the author as to his proposed methods. The important feature of the discussion was the enthusiasm which accompanied the suggestion to enlarge as well as aid in the campaign when it is inaugurated. Among the speakers were Philander Betts, C. W. Hoy, C. Butcher, Ormsby F. Potter, J. P. Hanlan, C. H. French, Col. Rogers, H. H. Greenfield, H. H. Newman, R. R. Young, Louis Stotz, F. France, J P. Zingg and F. N. Hamerstrom. The dinner that followed, which was served in the banquet hall adjoining, was held jointly with the "Gas Meeters," and the spirit of fraternality was much in evidence. Following the custom at these gatherings the speeches were a minus quantity, but not so with the stories of Messrs. Brock, Kelley, Conroy, Smith, Stebbins, senting all away in good humor. Announcement was also made that the third section of the "Gas Meeters" had been formed in Cleveland with 75 members.

December Meeting, New York Section, I. E. S.—Another joint meeting is to be recorded, as the Art-in-Trades' Club, of New York, and the New York Section of the Illuminating Engineering Society got together at the Engineering Societies' Building, 29 West 39 street, Thursday evening, December 12th, and listened to a well-thought out paper, by Mr. George Leland Hunter, on "Color Shade and Texture." The author made a number of statements concerning the lighting and decoration of rooms which have been debated at length in the past, but the reasons which accompanied the statements must have been convincing, for the discussion was all of the constructive order. Among those who engaged in the discussion were Messrs. P. S. Millar, Bassett Jones, Jr., Norman Macbeth and G. S. Barrows. The next meeting is also to be a joint one when the New York Sections of the Illuminating and the National Commercial Gas Association will gather, in the Edison Auditorium, 44 West 27 street on the 9th prox., when Mr. R. F. Pierce will read a paper on the lighting of Taft Hall, Auditorium Armory, Atlanta, Ga., during the recent gas show.

CURRENT MENTION—

Manager George A. Balz, of the Didier-March Company, Perth Amboy, N. J., informs us that his Company has closed a contract with the proprietors of the Providence (R. I.) Gas Company for a second extension to their vertical retort plant. The installation is to consist of 6 benches, 15 retorts to the bench, together with all auxiliary equipment. This would seem perfect proof that Engineer Miller and President Ellis are quite well satisfied that the Didier-March installation gets better as they become better acquainted with it.

According to a recent issue of the New York *Sun*, Mr. C. G. M. Thomas, Vice-President and General Manager of the New York and Queens Electric Light and Power Company, Flushing, N. Y., has evolved a scheme that certainly is novel in its application to the army of co-workers in the lighting industry. To begin with, Mr. Thomas is the gentleman to whose alertness and exceedingly clever business practices the footing gained by the Standard Gas Light Company, of this city, in the fierce New York city gas competition of 15 years or so ago, is largely due. Of course, in this crediting much of the percentage of the results achieved on the interloping Standard account should go to Mr. Ferdinand McKeige, the Company's General Manager, and the gas business voicer of the famous Sage-Terry combination. By-the-way, Mr. Terry is as active, alert and forceful to-day as he was 20 years ago—and his span-of-life is well past 90. This digression will likely be pardoned, for the writer, having been well in the fray at the time these "mighty warriors" were contesting with the Irving Place magnates for the control of the artificial lighting of America's first city, naturally must go back to the sere and yellow, when a name or two, or an act or more of to-day brings him in circuit with the several days of long ago. However, Mr. Thomas is again to the fore, with a plan that has merit in its purpose, and as the *Sun* tells it, this is the planning: "This week each employee of the New York and Queens Electric Light and Power Company will receive a Christmas gift, in the form of a policy in the Equitable Life Assurance Society, for the entire amount of his yearly salary or wage, the policy to be good for one year. The face of this policy will be paid to the next of kin of the employee, should the latter die, or be killed by accident, the coming year. The full amount of salary will be insured to all employees, up to those who receive $3,000 per annum; but no policy will be for more than $3,000. There are 350 persons concerned in the arrangement, and the Company has executed a blanket insurance policy with the Equitable corporation for well over $300,000, the premium on which will, of course, be paid by the Company. It is also understood that a Bureau has been established, through the working of which experts are to make frequent visits to the Company's plants, with view towards making suggestions for bettering the safety of its employees.

The new storage holder, erected at 24th street and Jefferson avenue, Detroit, Mich., to the order of the Detroit City Gas Company, by the Riter-Conley Company, of Pittsburgh, Pa., is ready for effective work. This holder, construction work on which was begun in November, 1911, is 225 feet in diameter and 212 feet in height, and is rated to retain 6 millions cubic feet of gas. Mr. E. H. Millard super-

intended the work of construction for the Riter Conley folks, Mr. Osborn, of course, being also in evidence on such account, while Superintendent O. A. Sinsel acted as overlooker for the Gas Company.

THE Mutual Aid Society of the Consolidated Gas Company, and its allied branches, gave a most enjoyable annual entertainment and reception some evenings ago. The place of the gathering was the Star Casino, 107th street close to Lexington avenue. Unfortunately the weather was bad, very bad; but, in spite of the stated inclemency, the wide and long ball room was actually crowded when the President (Mr. T. S. Barlow) ordered the festivities commenced. Prominent in the throng that shared the amenities of the occasion were President, George B. Cortelyou, Chief, William H. Bradley; Engineer of Manufacture, Mr. George E. Woods; Engineer of Distribution, Mr. Colin C. Simpson—the greatest defier of time in the Company's ranks—and many other ranking officers of the huge corporation. It is noteworthy that the chief officers of this Company are always assisting, both through material aid and the moral helping that comes through their personal presence at the outings of their men, the force to become closer and closer together with each succeeding year. The Committee of Arrangements on this occasion consisted of Messrs. H. V. Middleworth (Chairman), that prince of *bona fides*, "Billy" G. Zepf, Joshua Snowden, J. H. Muller and the never-misty O. H. Fogg. —B.

THE Rockford (Ills.) Gas Light and Coke Company is planning to greatly increase the capacity of its plant; in fact, as our informant states, the plannings call for construction and reconstruction which will put the Company on a generating basis up to four millions cubic feet per day. An active intimation that next spring will see this work commenced lies in the Company's recent act of acquiring a plot of land adjoining the present plant on South Avon street. The frontage of the new tract shows an extension of several hundred feet.

THE Pacific Gas and Electric Company has added to the business equipment of its Oakland (Cal.) division six Chalmers, No. 30 road sters, after an extended trial of several other autos of improved types during the past year.

THE Charlestown (Mass.) Gas and Electric Company has removed to its new business quarters in the Warren Institution for Savings building, at the corner of Main and Henley streets.

THE New York Mutual Gas Light Company has declared a dividend (semi-annual) of 4 per cent., payable January 18th to stockholders of record December 27. Last year the return on this account amounted to 5 per cent.

"B. V. B.," writing to the JOURNAL under date of December 16th, says; "Senator Bloomfield H. Minch was elected President of the Bridgeton (N. J.) Gas Light Company at the last regular monthly meeting. The vacancy in the office of President was caused by the death of Daniel Bacon, who held the office for a long term, and Senator Minch, who has been serving as Vice-President, was advanced to the more responsible position. Mr. S. P. Fithian was elected Vice-President, and the vacancy in the Board of Directors was filled by the election of County Collector Edward P. Bacon, son of the former President. The Company is to put a storage holder on the site near the south works, which holder will be erected by the Bartlett, Hayward Company, of Baltimore.

"B. V. M.," writing from Wilmington, N. C., under recent date, reports that gas has been sent through the Sumter Gas Company's mains for something over a month, much to the gratification of the residents and to the satisfaction of the Company's proprietors. The plant, respecting which Sumter is deservedly proud, is complete and modern in every respect. Its cost was not less than $75,000, and it was constructed to a scale which took into consideration the thought that in a comparatively short time the population of Sumter will equal 30,000.

MR. THOMAS W. SUMMERS has resigned the position of General Manager of the Ithaca (N. Y.) Electric Light and Power Company; and we are informed that Mr. J. I. Mange the Vice-President of the corporation, will add thereto the duties of Manager. Further, Mr. Mange will act as Superintendent of the Ithaca Gas Light Company.

WE are not advised as to the immediate intention of Mr. Summers regarding his business methods; but if he has not already made a connection, the fact of his being "out" would seem to afford some lighting corporation in need of a Manager, an excellent opportunity to secure a good one.

LAST month a certificate was filed with the Secretary of State of Texas, announcing the dissolution of the Abilene Gas Light, Fuel and Power Company. The named corporation, along with the Abilene Light and Water Company, and the Abilene Ice Company, were recently purchased by Messrs. N. W. Halsey & Co., of New York, and the American Public Service Company is the holding Company. Its headquarters are in New York city.

THE proprietors of the Hanford (Cal.) Gas and Power Company, having refused to make payment to the city of 3 annual sums of a certain percentage of its gross receipts, as provided for in its charter or franchise, the Hanford Board of Trustees have instructed City Attorney Kilpatrick to commence suit to recover it. The Company avows that the inter-State commerce act exempts it from any such demand on the part of the city. The franchise called for the payments after the first 5 years of the Company's life. When the first payment came due in 1908 the Company declined to make it, but eventually paid under protest and then sued to recover the sum. The Appellate Court decided that the Company, having paid the money, could not recover it, but the tribunal failed to rule on the constitutionality of the law with regard to the city's right to demand the payment. A proceeding will now be commenced in the Appellate Court for a decision on that point. The Company now owes 3 annual payments, the sum total of which is not far from $1,300.

THE following action was taken at a special meeting of the Board of Directors of the Chambersburg (Pa.) Gas Company, respecting the death of Mr. Andrew Buchanan:

Whereas, This community, in the death of Mr. Andrew Buchanan, has suffered a distinct loss. He was one of our most prominent and influential citizens, and was identified with many of our business and charitable enterprises. Mr. Buchanan was most liberal in his gifts to all deserving objects. No charitable or religious institution ever appealed to him in vain. In making his donations he was modest and unassuming, and the public will never probably have knowledge of many of his gifts. His disposition was kind and gentle, his manner considerate and courteous. Mr. Buchanan had been President of the Company for a number of years, during which period he devoted much of his time and attention to the management of its affairs. The Company derived great benefit from his care and judgment. The Board feel that his position will be difficult to fill with the same efficiency. Therefore,

Resolved, That the Secretary be instructed to spread these resolutions upon the minutes of the Company, and to furnish copies to the newspapers of the town.

MR. HENRY FAYETTE COGGSHALL, for many years the Engineer-Manager of the Fitchburg (Mass.) Gas Light Company, until his retirement from active business in 1910, died at his home in Fitchburg, the morning of the 15th inst. He was in his 89th year, having been born in Mansfield, Conn., December 26th, 1823. The funeral services were held in Calvinistic Congregational Church, at 2:30 of the 18th inst., the Reverend James Chalmers officiating.

BOOK REVIEWS.

"*Coal.*"—By Prof. E. E. Somermeier, Ohio State University; McGraw-Hill Book Company; 180 pages; Price, $2.

The author has prepared and collected considerable data concerning the composition and properties of coal, with simple methods of analysis and sampling, together with specifications and flue gas analysis. It is primarily intended for engineers or large users, and would undoubtedly prove a valuable reference work for them.

Publications.

[All Publications, Catalogues, etc., mentioned below, are kept in our office for the convenience of our patrons.]

"*Annual Report, Public Service Commission, First N. Y. District,*"—The Public Service Commission, First New York District, transmitted its annual report for the year 1911, to the Legislature on January 10, 1912, and it is now in print, partially, copies being available since the date noted. The first section contains nearly 800 pages, and mainly has to do with orders, complaints, etc.; although some data may be found concerning the general statistics of New York gas and electric corporations.

(*Continued from page* 407.)

they will properly support, without sagging or bending, any globe or shade with which they are intended to be used. They should be readily and rigidly attached to the fixture arm or portable stand, and held in place by screwing down the burner, or by other means. They should provide a good seat for all parts of the globe with which they are supposed to be in contact.

No. 3 *Goose or Stork Neck :*

(A) The thread on the fixed portion of a goose or stork neck should be not less than 5 full threads.

(B) The ground joint between the fixed and movable portions should have a bearing surface of not less than 1 inch, and the diameter of the small end of the ground joint should be not less than $\frac{5}{8}$ inch.

(C) The joint should be thoroughly and properly ground, not merely tool finished. It should be perfectly gas tight, without grease, under a pressure of 8 inches water column.

(D) It should be possible to lock the movable part to the fixed part by a bayonet lock, or similar means.

No. 4 *Casing :*

Where casing is used, it should be cut to an exact length so that the joints may be made up tight, without marring or jambing the parts of the fixture at either end of the casing.

No. 5 *Chain Pulls :*

(A) Where a by-pass chain passes through a part of the casing, or an ornament of the fixture, the opening through which the chain passes should have an eyelet, or similar means, to prevent the links of the chain from catching on the edges of the opening. If a rod is used in place of a chain, the eyelet may be omitted.

(B) If a chain pull is to be used, a sample of such chain should be submitted for examination and approval.

No. 6 *Cocks on Portable Stands :*

A portable stand should not have a cock as part of the stand.

No. 7 *Swing Joints* :

(A) In fixtures having swing joints, the swing joint should be constructed in accordance with the specification for the gas fixture cock, in so far as that specification may cover the plug, the gas way and the lock nut and the jamb nut. It is to be understood that in no case shall the diameter of the plug at the small end be less than $\frac{1}{4}$-inch.

(B) Fixtures having swing joints must be made so that the arms of the fixture will, at all times, be in parallel horizontal planes and the construction must be sufficiently heavy so that the arms will maintain these positions when a lamp of any weight up to $2\frac{1}{2}$ pounds is attached. Exception : Fixtures which are intended to revolve in planes other than horizontal planes, need not conform with this clause of the specifications, but should be submitted for examination and approval.

(C) Swing joints should be so assembled, that the weight of the fixture has a tendency to seat the plug in the body.

No. 8 *Center Control Cocks :*

(A) A center control cock, which is the cock used for controlling the supply of gas to a fixture having 2 or more arms, and which may or may not be at the same time a by-pass cock, should have, in all cases, a $\frac{3}{16}$-inch gas way, and in other dimensions should conform with the gas fixture cock specifications appended hereto.

(B) If this center control cock has lever arms, these arms should be of sufficient length to permit of easy operation of the cock, so that neither the arms, nor the rods, nor the chains, operating the cock, come in contact with the body arms or other parts of the fixture.

No. 9 *Grease :*

The grease used on cocks or swing joints, should not contain resin, wax, rubber, paraffine or similar substance.

No. 10 *Sizes of Pipe or Tubing Used in Fixture Stems :*

(A)

Length of Stem.	No. of Lights.	When Made of Iron Pipe.—Cased Inch.	When Made of Iron Pipe.—Uncased Inch.	When Made of Brass Pipe, Duplex Tubing.—Plain Inch.	When Made of Brass Pipe, Duplex Tubing.—Chain Inch.	Size of Gas-way Through Cock Inch.
Two feet 6 inches and under.	1	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{8}$
Two feet 6 inches and under.	1-2	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{8}$
Over 2 feet 6 inches and under 3 feet 6 inches	1-2	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{8}$
Three feet 6 inches and over.	1-2	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{8}$
Any length.....	3-4	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{5}{16}$
" "	5-7	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{4}$	–	$\frac{5}{16}$
" "	8-12	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{4}$	–	$\frac{7}{32}$
" " .....Over 12		$\frac{1}{2}$	1	–	–	$\frac{1}{4}$

(B) "Length of Stem" is understood to be the distance in a straight line from the stiff joint to the lowest point of the pendant. In the case of wall brackets, which carry more than one burner, the sizes given in the table are correct, except that no pipe smaller than $\frac{1}{4}$ inch should be used. In brackets carrying more than one burner, the "Length of Stem" is understood to be the distance from the stiff joint to the point where the arms diverge.

(C) A one-piece (or harp) pendant, if not over 2 feet 9 inches long, may be made of $\frac{1}{8}$ inch iron pipe or $\frac{3}{8}$ inch brass tubing. If longer than 2 feet 9 inches it should conform to the table.

No. 11 *Sizes of Piping or Tubing for Arms :*

(A) Arms of pendants, or of wall brackets; *i. e.*, those parts which carry gas for only one burner—should be made not smaller than the following sizes :

Length of Arm.	When Made of Iron Pipe.—Cased, Inch.	When Made of Iron Pipe.—Uncased, Inch.	When Made of Brass Pipe, Inch.
Twelve inches or shorter ...	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{3}{8}$
Thirteen inches to 18 inches..	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{8}$
Over 18 inches.....	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$

(B) "Length of Arm" is understood to be a distance measured as follows : In pendants—a straight line from the center of the stem to the center of the burner nozzle.

In stemless wall brackets, like stiff brackets, or single-swing or double-swing brackets, carrying but one burner : A straight line from the stiff joint to the center of the burner nozzle, measured when the bracket has its maximum reach. In stemmed wall brackets : A straight line from the point of divergence of the arm to the center of the burner nozzle.

(C) In the case of cast wall brackets, the area of the gas-way in stems and arms should be not less than the area of the pipe, or tubing, of equivalent lengths of the sizes already specified.

No. 12 *Cocks :*

All cocks, including arm cocks, center control cocks, lantern cocks, or any other shutoff cock, should be made in accordance with the "Specification for Gas Fixture Cocks"—by "shutoff cock" is meant any cock intended to be used for completely shutting off the gas supply to a burner or burners.

SPECIFICATIONS FOR GAS FIXTURE COCKS.

It is not intended that this specification shall in any way govern the design of fixture cocks, except in so far as the dimensions given may govern the size. The drawing is merely conventional, and is intended to show only the dimensions referred to in the specification.

(1) The material of both plug and body should be free from all defects, and of such grade that constant use will not cause excessive wear.

(2) The end of the plug should have two flat sides for the washer, and two nuts (a main nut and a jamb nut) should be used instead of a tail screw. (Boston type.) The plug and the male thread on the end of the plug should preferably be made of one piece; if made of two pieces, the nipple forming the male thread on the end of the plug should be screwed, and sweated with hard solder, into the plug.

(3) The bearing surface for the washer on the cock body should be not smaller in diameter than the diameter of the washer. The washer should wear evenly on the face of the body.

(4) The plug should stop at 90° in either direction when shut off, but when the cock in question is a main by-pass cock, it may be a $\frac{1}{4}$ turn cock. The plug should be thoroughly and properly ground, not merely tool finished. The question of thorough grinding is of great importance; any sign of insufficient grinding will lead to the rejection of the cock. The cock should be perfectly gas-tight, without an excess of grease, under a pressure of 8 inches of water column, while the plug may be turned by hand.

(5) For turned cocks, the thickness (F) of the body wall at the gasway should be not less than $\frac{3}{32}$ inch. For cast cocks, the thickness of the body wall at any point, including the part that forms the miter, should be not less than $\frac{3}{32}$ inch.

(6) The tapered hole through the body should be recessed at the small end to a diameter at least 0.003 inch larger than the diameter of the small end of the plug; this is done to prevent the formation, by wear in grinding, of a shoulder in the small end of the tapered hole in the body.

(7) The gas-way through both the body and the plug should be not less than $\frac{1}{4}$-inch diameter. The gas-way in the plug should register with the gas-way in the body.

(8) Neither of the two distances (*B*) provided to take up for wear, should be less than $\frac{1}{32}$ inch.

(9) Neither of the two bearing surfaces (*C*) on either side of the gas-way should be less than $\frac{3}{16}$-inch in length.

(10) The distance (*D*) provided to take up for wear, should be not less than $\frac{1}{32}$ inch.

(11) The seal between the gas-ways in plug and body, when the key is hard over, should be not less than $\frac{3}{16}$-inch in length.

(12) The stop-pin (*A*) should be either screwed or driven into place. If a driven pin is used, it should be made of soft annealed metal.

(13) Diameter of the stop pin: If a driven pin, not less than $\frac{1}{16}$ inch; if a screwed pin, not less than $\frac{3}{32}$ inch. No portion of any $\frac{1}{16}$ inch diameter pin should extend below the miter—*i. e.*, below the line *MN*.

(14) Length (*H*) of the stop pin should be not less than $\frac{1}{16}$ inch.

(15) The key and the gas-way should be straight on the axis of the body when gas is on.

(16) The key and the plug should preferably be formed of one piece of metal; if not, the two pieces should be firmly attached by sweating with hard solder.

(17) The cock body should have, at the screw joint (*P*), not less than 5 full threads.

Report of Committee to Investigate the Provisions of the Constitution with Respect to Affiliation.[1]

To the Board of Directors, American Gas Institute—Gentlemen: Your Committee appointed to investigate the results of the provisions in the constitution for the affiliation of other Associations with the Institute begs leave to report as follows:

The investigation was first undertaken with a view to determine the intention of the provision in the constitution, and whether the results obtained have been in accordance with such intention. It would seem that the plan contemplated under Section 55 of the constitution was to secure co-operation between the Institute and the State and district Associations, with the resulting improvement to the gas industry at large.

An examination of the results indicates that but little has been accomplished for the benefit of the Institute and the industry. Aside from the representation in the Board of the Institute of the affiliated associations, affiliation has apparently accomplished nothing. The constitution provides that no original work shall be undertaken by an affiliated association without consultation with the Institute. This provision has been a dead letter, and, on the other hand, the Institute has not attempted to take advantage of the provision that each affiliated society is to undertake a definite amount of research work each year.

There are many people who join trade associations and societies as a matter of duty, without feeling that they individually secure any advantage from their membership. It would seem quite probable that there may be some, or many, members of the affiliated associations who would feel that they had done their full duty to the industry by belonging to such associations, and that they are, therefore, relieved from the responsibility of becoming members of the Institute. In so far as such is the case the Institute is a direct loser by the provision for affiliation.

There would seem to be an advantage in the appointment by the Institute of a small and active executive committee. The provision in the constitution allowing the affiliated associations to appoint a member of the executive committee to represent each association, provided the total members so appointed do not exceed six, will make it practically impossible for the Institute to have an executive committee. This would seem an additional, and a very strong, reason for changing the constitution.

While your committee was not charged with offering a substitute, the members of the committee, nevertheless, feel it is their duty to give the Board of Directors the benefit of their investigation, and will, therefore, take the liberty of recommending to the board, for such action as it may see fit, an entire change in the constitution, providing for geographic and local branches, instead of for affiliation with other associations.

An examination of the plans of organization of other societies, both here and abroad, shows that a large proportion are so organized as to provide for the organization of local branches. In every case the members of the local branches must be members of the general association, although we understand that the question of allowing the local branches to have special members, not members of their parent association, has been discussed in at least one of the large bodies in this country; but no such provisien has been actually made. The working of the arrangement for local branches has been most satisfactory and has gone far to broaden the influence of, and to strengthen the associations and societies that have tried it.

It is important to give each branch great latitude in its organization. Much pride is felt in the holding of official positions in the branches, and they should, therefore, be allowed to have as many officers as they see fit. Of necessity no branch should be allowed to do anything in violation of the constitution or by-laws of the Institute; but, in so far as its members act in accordance with the constitution and by-laws, they should be allowed such officers, and to follow such orders of business as they may wish.

The secretaries of each section should report regularly to the secretary of the Institute, and the Institute should have the privilege of publishing such proceedings of the branches as it might deem proper.

Your committee feels that there is sufficient evidence that the system of branches has helped the other Associations to warrant the Institute in adopting the system without undue delay. The necessary changes in the constitution to provide for branches are submitted herewith.

ALTEN S. MILLER, Chairman,
GEO. G. RAMSDELL,
NORMAN MACBETH.

GEOGRAPHIC AND DISTRICT SECTIONS.

Substitute for Section 55 of the Constitution.—A. In so far as the district associations now affiliated with the Institute carry out their agreements not to elect to voting membership any person connected in any way with the gas industry, who is not directly identified with gas or electric interests within the State or district designated by the name of the Association; and to consult with the Institute before undertaking any original work of interest to the gas profession, such associations will continue in affiliation with the Institute, but no further arrangements will be made for affiliation with any other association. Each and every district or State gas or gas and electric association with which such agreements have been entered into shall be entitled to elect one of its members a member of the Board of Directors of the Institute. The members so elected will be in addition to those named in Section 23, provided that the number of such associated directors shall never exceed one-third of the total membership of the Board. Should the Board of Directors provide for an executive committee, this committee shall include in its membership one man from each of the affiliated associations, as long as the number of such associations does not exceed 6. Thereafter there shall be on the executive committee at least 6 men who are members of affiliated associations and have among them membership in at least 6 such associations.

B. The Board of Directors may in its discretion authorize the formation of geographic sections. The territory to be included in each section shall consist of a State or group of States.

C. Subject to the approval of the Board of Directors of the Institute, and the governing body of the geographic section in which it is located, city or district sections may be formed.

D. The geographic and city or district sections may adopt such constitutions and by-laws and elect such officers as they see fit, provided that nothing shall be done in violation of the constitution and by-laws of the American Gas Institute.

E. After giving due notice, any section may send a representative to appear before the Board of Directors of the Institute, for the purpose of conferring with the Board in regard to any matters relating to the affairs of the Institute in the territory embraced by the section.

F. The Secretary of the section shall report its proceedings to the Secretary of the Institute.

G. No person shall be eligible for membership in any section who is not a member of the American Gas Institute.

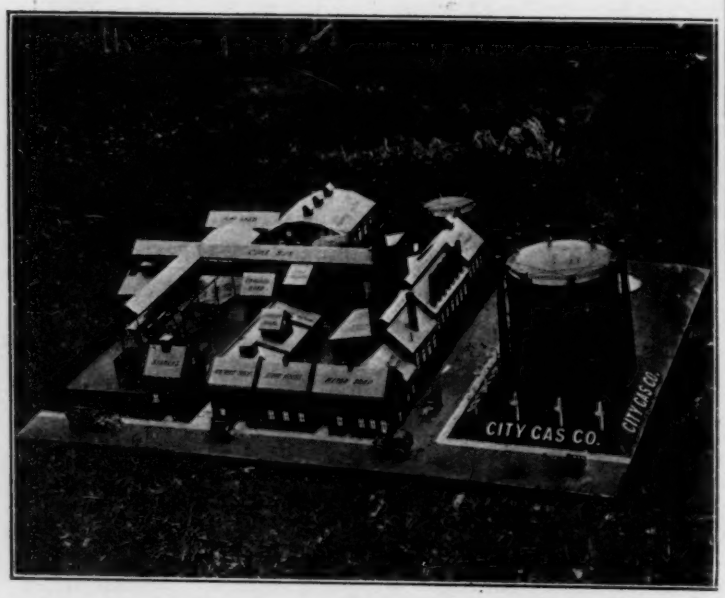
H. Sections may be dissolved for failure to comply with the constitution and by-laws of the Institute.

THE expense attendant upon the special election, held in Elgin Ills., early this month, so the voters might reject or accept the franchise under which the Western United Gas and Electric Company is to supply gas to the inhabitants of that city for a term of years, amounted to $412.57. This expense was borne altogether by the Company.

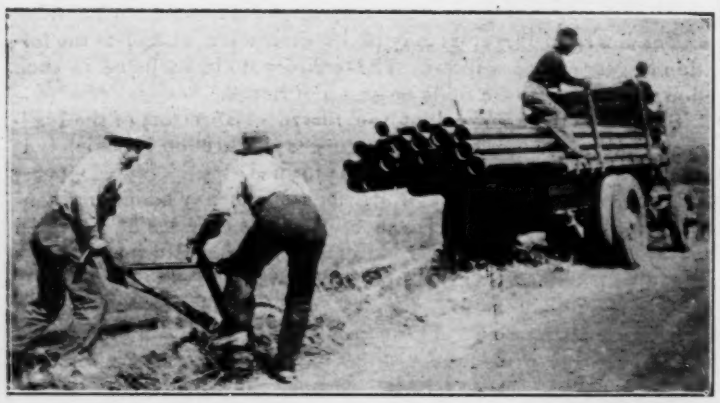
1. Prepared for Seventh Annual Meeting, American Gas Institute; Atlantic City, N. J., Oct., 1912.

New Methods and Appliances.

A MODEL GAS PLANT.—"Fair Week" in London, Ontario, this year kept the good people of that handsome city on the *qui vive*, and the local merchants, with any thought of putting forth a best step, vied in the originality of the designs that appeared either in their stores, store windows, or even on the sidewalks. And we are not at all wide of the truth when saying that the show afforded by City Gas Company, of London (pictured in the accompanying illustration), attracted much attention. It consisted, as the cut depicts, of a reproduction of the plant in miniature model, and we venture to remark that the display has taught many a gas user much about the magnitude of the plant, and the complexity thereof, from which issues the current that lights their homes, from cellar to garret, and that causes habitable the kitchens in which their food is prepared, to say nothing of the economy of such preparing as between the current and the heat from solid substances—be the latter of coal, or of wood, or of peat, or the like.



HAULING AND PULLING.—The ilustration affords a good example of how hauling and pulling may be successfully accomplished at the one time by an apparatus completely under the control of its operator, even to the point of causing it to turn in its own length. The example herewith is that of a 5-ton Alco truck, which this year is performing to the letter (and more) triple yeoman's work for the Southern California Gas Company, on its Los Angeles division.



Five-Ton Alco Truck performing Dual Duty for the Southern California Gas Company of Los Angeles—hauling Pipe and Digging Trenches. American Locomotive Company, New York.

AT a meeting of the Advisory Board, Fall River, Mass., favorable action was taken on the petition of the local Gas Company for permission to give a demonstration of high power boulevard gas arcs. The samples are to be six in number, and the locations are to be in fixed places on North Main street, between Elm and Pine streets.

Exhibitors, Gas Show, Atlanta, Ga., Dec. 2-9, 1912.

A. B. Stove Co.—Made in Battle Creek. Ranges are shown by Messrs. T. J. Moran, J. H. Prindle and A. J. Reedy.

American Graetzin Light Co.—Graetzin high-powered, intensive low pressure lamps, and also high pressure lamps of the types successfully used abroad. Exhibited by Messrs. Hanz Graetz and Cornelius Coleman.

American Metal Hose Co.—Flexible metal tubing, suitable for a large variety of special connections, displayed in various sizes. In charge of Messrs. C. S. Hungerford and Ellis F. Phelan.

American Meter Co.—The smallest working meter, 2½ inches high and 1½ inches wide. An anaesthetic meter, an improved Hinman Junkers calorimeter, cubic foot bottle and 48-inch pot gauge, as well as meter provers, etc., were included in this most varied and certainly one of the most interesting exhibits of the show. Manager Harrington and Mr. D. Lambert were at the booth.

Baltimore Gas Appliance and Mfg. Co.—The new Oriole ranges and heaters were shown in a number of types and sizes, and are surely a credit to their designers. The Company was represented by Messrs. H. W. Hunter, G. W. Crawford and Wm. A. Richards.

Baxter Stove Co.—Baxter Banner Ranges were shown by Secretary H. Dirlan and Mr. F. W. Murray.

Beler Water Heater Co.—Several types of Beler water heaters were shown in operation, and the Company was well represented by Messrs. W. J. Langenheim, W. F. Spear, J. H. Folsom.

Bless & Drake.—Mr. Arthur Drake showed a new gas iron.

Block Light Co.—Lamps, mantles and accesories were shown by Messrs. Joseph Phillips and M. Korach.

Blodgett & Co., G. S.—Bakers' ovens in several sizes, in full operation, were under the supervision of Messrs. Geo. H. Holden and J. S. Patrick.

Central Flatiron Mfg. Co.—The good points of the I. M. E. gas iron were well demonstrated by Mr. E. P. McKinney.

Clark & Co., Geo. M.—Jewell all enamelled steel ranges and the new "retort" heaters were found near the entrance. The Company was represented by Messrs. R. K. Clark, I. W. Peffly, John C. Brown, E. J. Seely and B. S. Pedersen.

Crandall-Pettee Co.—Baking bread for charity is surely a good method of demonstration, for the receipts from the bread baked in the portable ovens were given to the Atlanta Free Kindergarten. The exhibit was in charge of Mr. Paul J. Delaney.

Crane Co., Wm. M.—The feature of the 1913 line of ranges is interchangeability of parts. Vulcan goods of both domestic and industrial types were placed away from the crowd, but nevertheless the representation insured a large attendance, among those present being Messrs. Wm. M. Crane, T. J. Potter, C. F. Tim, F. G. Dean, H. N. Christmas, H. W. O'Dowd, W. H. Schutt.

Dangler Stove Co.—Dangler ranges, both large and small, were shown by Messrs. C. S. Dangler, F. B. Dangler, H. C. Berger.

Detroit Stove Works.—A rather complete assortment of Detroit Jewel ranges and appliances was shown by Messrs. G. W. Johnston, W. B. Leishman, E. G. VanWie, Joe Carr, H. D. Schall.

Eclipse Gas Stove Co.—The largest space used by any exhibitor was not the only thing of merit in the Eclipse exhibit. It was tastefully arranged, and the extensive line very well displayed. Represented by Messrs. Geo. D. Roper, M. J. Green, H. C. Aikin, John F. Parker John M. Brock.

Eriez Stove and Mfg. Co.—Eriez ranges were shown by Messrs. J E. Mason, Wm. R. Epp.

Estate Stove Co.—The Estate line was shown by Messrs. David F. Kahn, Bertrand B. Kahn, J. D. Taylor, Jr., D. C. Harr, Chas. Edward Draper, L. F. Atticks.

"Fiat Lux" Company of America.—The lighting controller of the Fiat Lux Company was shown in action outside of the Armory. The Company was represented by Messrs. Theo. H. Lunde, Rudolph Moe.

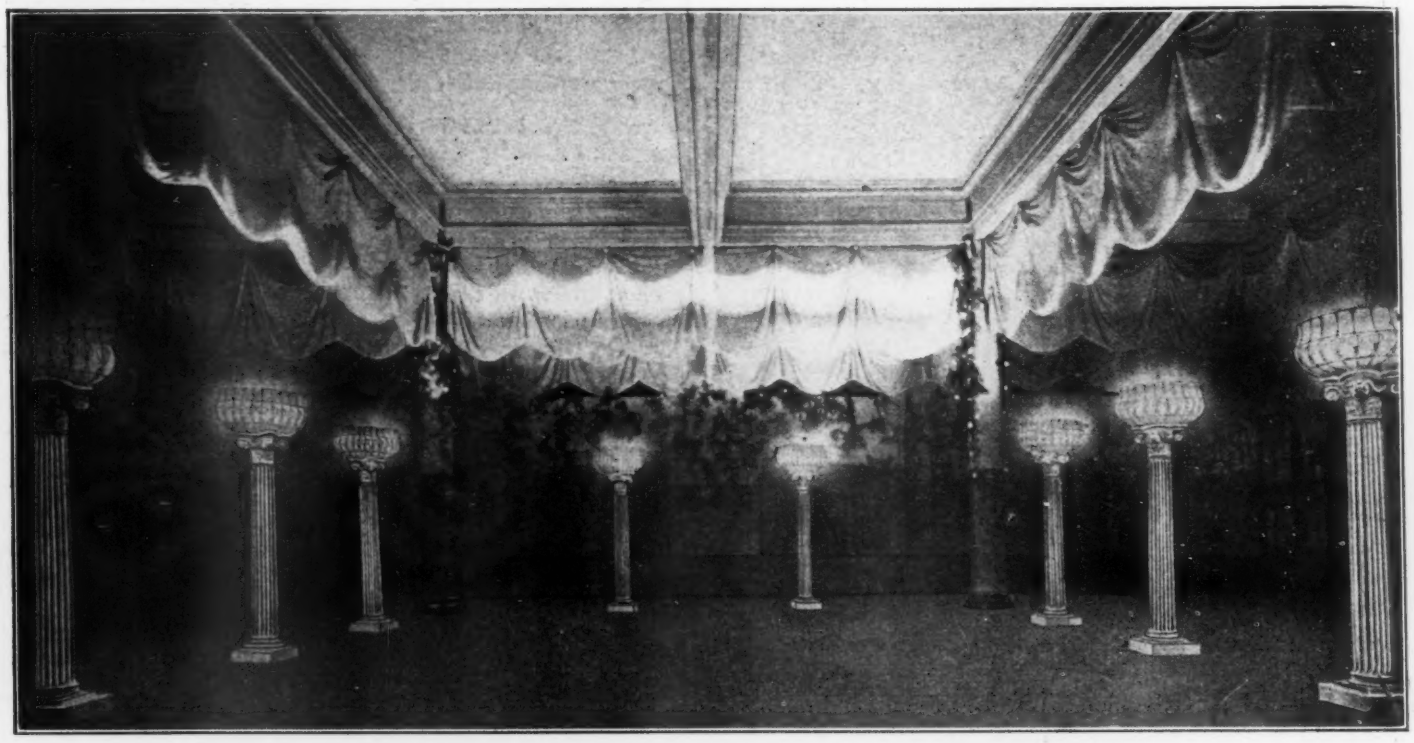
Fuller Warren Co.—Several types of Stewart ranges were shown by the Company's Treasurer, Mr. J. L. Potter.

Garwood Gas Lamp and Heater Co.—A new type of gas steam heater was exhibited by Messrs. C. R. Welch and D. E. Hunnicut.

General Gas Appliance Co.—The Triplex short cabinet and several types of Simplex water heaters were shown by Messrs. C. B. Elmer, J. W. Fagaus, H. A. Shunk, J. A. Sackett.

Gilbert & Barker Mfg. Co.—A new gas furnace, in charge of Messrs. Ricard and Epstein.

General Gas Light Co.—The real exhibit of Humphrey lamps was



Semi-Indirect Welsbach Gas Lighting, Taft Hall

in the lightiug of the show, the streets outside and the sign on top of the building; but, nevertheless, the booth contained another surprise, as the flower vase in the center was an indirect fixture which lighted the display of lamps placed above. All sections of the country were represented by those found at their booth, in the persons of Messrs. A. H. Humphrey, J. P. Conroy, W. F. Weadley, J. J. Knight, G. P. Knight, H. R. Humphrey, W. J. McCartney, E. D. Brewer, J. M. Coles, O. D. Chapman, George T. Fisher, C. B. Babcock.

Hays Mfg. Co.—Hays service and meter cocks, curb boxes, tapping machines and the Manhattan water heater were exhibited in charge of Messrs. Chas. E. Mueller, A. L. Piper.

Humphrey Company.—Directly opposite the Gas Light Company's booth were the Humphrey geysers, with double control, single gas valves, including a new small capacity unit, square in shape, for small houses. Those at the booth were Messrs. H. S. Humphrey, T. A. Lemke, Geo. B. Cross, E. C. Lovett, H. P. Dains, T. E. Grant, L. E. Tremain, A. E. Creviston.

Improved Appliance Co.—Several types of industrial appliances were shown by energetic Mr. John M. McMillin and his assistant, Mr. Jas. S. McLean.

Johnson Gas Appliance Co.—Several new types of burners for industrial use were included in the exhibit, in charge of Messrs. W. A. Rall, C. J. Johnson, C. D. Davidson.

Lloyd Construction Co.—Vacuum governors and district control governors were shown in service; also several specialties, including valves. Displayed by Messrs. A. G. Lloyd, W. S. Guitteau.

Long-Landreth Co.—Climax automatic water heaters, shown in charge of Messrs. Long and Landreth.

Manufacturers Sales Co.—Their well-known meter connections and gas specialties were exhibited by Messrs. M. A. Corbett, F. E. Stevens.

Meek Oven Co.—These bakers' ovens were shown in operation by the man who helped to make them so popular at Baltimore, Mr. A. G. Vogel.

Michigan Stove Co.—Garland ranges, including a number of new designs, were shown by Messrs. L. B. Young, John R. Strain.

Modern Gas Iron Co.—The name of the Company indicates its specialty. Represented by Mr. Horace L. Brewer.

Mueller Mfg. Co., H.—A new tapping and drilling machine, bronze diaphragm house governors, cocks and tools, bearing the well known Mueller trade mark, were shown by Mr. R. K. Ford.

National Gas Light Co.—Complete line of the attractive "Beau Ideal" arc lamps were shown to good advantage by Messrs. E. R. Lewis, J. B. Crabtree, G. H. Vroom.

National Incinerator Co.—Garbage incinerators, of the type known as the "National," were shown in use by Messrs. F. D. Van Vechten, R. L. Moss.

National Stove Co.—Its well-known direct action ranges and the new Thermax water heaters were shown by Messrs. S. E. Little, B. E. Meacham, Thos. Rath.

National Tube Co.—A "Kewanee" sign, made up of unions and other fittings, formed an attractive background for the National pipe and valves exhibited, as well as a table top made of thousands of pieces of Shelby seamless steel tubing, The representatives at the booth were Messrs. H. P. Wilson, D. A. L'Esperance, T. Schoeckel, T. W. Thorne, L. F. Hamilton.

New Method Stove Co.—The representatives showing the New Method stoves were Messrs. B. R. Ahrendt, W. J. Thorn.

New Process Stove Co.—The old line of the Standard Lighting Company, shown under the name of "New Process," being represented by Messrs. John G. Way, M. A. Possons, W. G. Vought, W. G. Withers.

Oven Equipment and Mfg. Co.—Sentinel irons and soldering furnaces were shown by Mr. John T. Fiske.

Pennsylvania Globe Gas Light Company.—The "made in America" high pressure lamps were exhibited in use outside of the Armory; and at the booth were Messrs. V. A. Westermaier and F. L. Rumble.

Pittsburgh Water Heater Co.—Lion water heaters, in a large variety of sizes and types, were well displayed, the principal object of interest being the new burner. Those found at the booth were Messrs. R. C. Frampton, H. O. Dummett, L. B. Mettler, J. R. Wheeler, E. A. Krah.

Rathbone Sard Co.—The oldest stove house in America showed Acorn ranges and similar other appliances. The Company's representatives were Messrs. R. E. Sard, J. J. Garrison, T. R. Beebe, J. C. Shirra, W. C. Cuinn, G. E. Harris, G. M. Millspaugh.

Rector Gas Lamp Co.—The new types of vacuum heaters were shown by Messrs. Alcorn Rector, Harry R. Linton, W. H. Crow, S. A. Harpold.

Reznor Mfg. Co.—An extensive line of the well-known Reznor type of heaters was shown by Mr. Chas. Harbison.

Ringen Stove Co.—Quick meal ranges, shown by Messrs. W. A. Lockwood, R. L. Kahle and C. S. Smith.

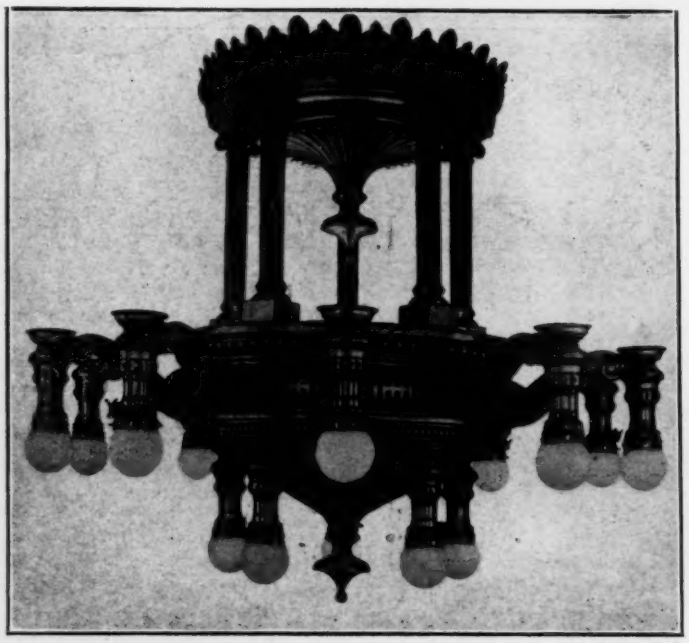
Roberts & Mander Stove Co.—"Quality," 35-inch, short cabinet ranges and several standard types were exhibited, in charge of Mr. Stanley Grady, assisted by Mr. W. J. Hammett.

Rosenbaum Mfg. Co.—Rose gas irons were shown in action by Mr. Samuel Rosenbaum.

Rulu Gas Lighter Co.—A new type of gas lighter, suitable for a variety of purposes, were displayed in charge of Mr. J. K. Luethe.

Ruud Mfg. Co.—The well-known Ruud heaters and new types of tank and cottage heaters, also a new automatic gas iron, were exhibited, the representatives being Messrs. A. P. Brill, S. W. Hemphill, H. J. Nicholson, R. A. Pinkham, J. C. Bartlett, C. T. Aaron.

Safety Gas Lighter Co.—These well known safety lighters were



One of the Four Chandeliers Lighting the Show. (General Gas Light Company.)

demonstrated by Messrs. Geo. J. Kelly, T. T. Pomeroy, Miss Clara Lane.

Schneider & Trenkamp Co.—This is the last of the American Stove Company's divisions in the list, but is not the least important for that reason. The exhibit was in charge of Messrs. H. C. Fritz, Robert Wilson, C. A. Case, A. V. Ellis, F. G. Nicolaus, Jacob Schirathin.

Shapiro & Aronson.—The only gas fixtures exhibited at the show; would surely be a credit to any gas company. They included single units, showers and semi indirect pieces, all equipped with standard cocks. Represented by Messrs. Will W. Barnes, N. W. Belmuth, R. L. Groome, H. Popkin.

Sibley Stove Co.—Sibley ranges were shown by Messrs. W. C. Sibley, Irwin Lehman.

Somerville Mfg. Co.—The Stack water heaters, well displayed, were shown in operation by Messrs. E. S. Stack, W. L. Hallett.

Sprague Meter Co—Cast iron meters were shown in service. The exhibit covered meters for low and high pressure and also house governors. Shown by Messrs. H. H. Greenfield, W. P. Hutchinson, John C. Clark, R. A. Sanborn.

Strause Gas Iron Co.—The "Iwantu" iron was shown by Messrs. Louis J. Strause, Harry Strause.

Sun Vapor and Gas Street Light Co.—The attractive, ornamental street lighting system for white way work, known as the Sun gasolabra, was shown in use, in charge of Mr. Henry E. Streiber.

Thomas, Roberts, Stevenson Co.—"Fortune" ranges. Shown by Messrs. F. C. Greene, C. S. Smith, C. E. Richardson and Miss Anna A. Carroll.

Union Stove Works.—Astor ranges were shown by Messrs. Geo. C. Pennell, A. F. Glaessner, John H. Pratt.

United Lead Co.—Ulco lead wool in reels and in 50-pound waterproof packages, were shown by Mr. H. B. Coho.

Vesta Gas Range and Mfg. Co.—A Southern product. Vesta ranges looked well. In charge of Mr. W. B. Miller and Miss Julia Buck.

Vacuum Clothes Washer.—E. G. Robinson showed his perfection vacuum clothes washer.

Weir Stove Co.—Glenwood ranges were shown by Messrs. M. E. Abbott and Robert M. Leach.

Welsbach Company.—The entrance hall was turned into a bower, with climbing roses, trellis work and grass, and contained the exhibit of the Welsbach Company. The feature of the exhibit was the new, high-powered-single-mantle unit, consuming 9 cubic feet per hour. The Company was represented by Messrs. Sydney Mason, F. N. Hamerstrom, C. W. Wardell, A. Mason, R. F. Pierce, T. J. Litle, T. Piser, R. J. Ralston, B. J. Kellum, E. C. Chapin, F. G. Corbus, H. H. Richman, T. Flamer and J. R. Stetson.

Wood Mfg. Co., J.—Electric weld water heaters were shown by Messrs. H. E. Gilbert, Edwin S. Thompson and Harry Peck.

Wright Gas Iron Novelty Co.—Shown by Mr. D. H. Banker.

Recent Patent Issues.

Prepared for the AMERICAN GAS LIGHT JOURNAL by ROYAL E. BURNHAM, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 20 cents.

1,046,489. Gas Chain Fixture. F. DeW. Pitcher, Rochester, N. Y., assignor to Welsbach Light Company, Gloucester City, N. J.

1,046,758. Gas Burner. A. J. Fisher, Evanston, Ills.

1,046,819. Gas Fixture. H. Lyon, Gloucester City, N. J., assignor to Welsbach Light Company, same place.

1,046,931. Automatic Gas Cut Off. R. L. Alexander and J. D. Lydick, Shawnee, Okla.

1,047,095. Gas Lighting Device. T. J. Litle, Jr., Woodbury, N. J., assignor to Welsbach Light Company, Gloucester, N. J.

Items of Interest
FROM VARIOUS LOCALITIES.

MR. S. B. WILLIAMSON, for the past 12 years Division Engineer of the Pacific Division, Panama canal construction, has resigned that position in order to take up service with that great International firm of engineers and contractors, Messrs. J. G. White & Co., of New York and London. Col. Goethals called Mr. Williamson to the canal service in 1900, and in May, 1907, he appointed him Division Engineer of the Pacific locks and dam. In this position he had charge of the construction of the gigantic locks at Pedro Meguel and in Miraflores, involving the placing of vast quantities of concrete, extensive dry cementing and dredging, the construction of terminal docks at the Pacific entrance and municipal work in Panama City and the zone south of Culebra, In fact Col. Goethals considered him his "right hand man." Previous to his labors in Panama, Mr. Williamson was engaged in railroad and general construction work throughout the United States. He was also in the service of the United States Government for some time, and in 1900 he was in charge of the fortification work at Newport, R. I. In his new field of work he will be associated with the White corporation's London office, where he will act in the capacity of Principal Assistant Engineer, directing construction work in all parts of the world, save the United States and its possessions.

WHILE he remained away from the gas business proper for some years, latterly having been in the water and light (electric) utilities business in St Louis County, Mo., nevertheless one was close to the truth in stating that he would eventually return to the old field and fold. The man who has returned is Mr. John R. Cullinane, who prior to 1904 was quite active in the gas business at Denison and also at Greenville, Tex.; and to his efforts must be creditably charged much of the success of the Texas body known as the "Southwestern Electrical and Gas Association." So we exclaim, "Welcome to the fold again, Brother Cullinane." He has purchased the plant of the Greenville (Tex.' Gas Company, and, in order that he may operate it right up-to date, declares to us in a letter dated the 11th inst., "* * * I want to read your paper again, and would appreciate your entering my subscription."

MISS J. ARMINSON MACINTYRE, for over 10 years' Manager of the Publicity Division of the C. W. Hunt Company, West New Brighton, New York, is resigning that position early in the New Year. While no definite plans have been made for the future, we understand that Miss MacIntyre will travel for a time in any event. Communications for her, mailed January 1st and after, should be forwarded under care of the National Arts Club, N. Y. city. Wherever she goes may she have the very best of good luck.

THE Joseph Dixon Crucible Company, of Jersey City, N. J., possibly in the hope of taking a positive step in reducing the cost of living, is out with the announcement that the selling price of its "Silica-Graphite: One Quality Only," paint will be sensibly reduced the first of the New Year. The Dixon folks plainly state in their announcement that they have been enabled to do this through the decrease in the price of linseed oil, which latter is the vehicle for the pigment. For about 50 years this paint has been in growing demand, and with such a record for good work well done, it is little wonder that its fame spreads and its use sticks.

MR. ARTHUR J. SMITH, since 1909 connected with the Maquoketa (Ia.) Light and Fuel Company, has been appointed Manager of the Citizens Gas Company, at McCook, Neb.

MR. FRED. W. FREESE, of Fort Wayne, Ind., informs us that he has been awarded a contract for the construction of a complete gas plant for the proprietors of the Connersville (Ind.) Natural Gas Company. The layout comprises a brick structure in which will be at present constructed 2 benches of 6's, half depth plan, an exhauster, condenser, ammonia washer, scrubber, 2 purifying boxes, 5 feet deep, by 16 feet in diameter, a 5-foot station meter, a storage holder (up to

retaining 100,000 cubic feet), in steel tank, and a street main governor.

RECENT advices from Boston are to the effect that current rapid advances in the shares of the Charlestown (Mass.) Gas and Electric Company is due to the fact that the Cambridge (Mass.) Company's proprietors are desirous of absorbing the former. It is further said that in the event of a change in the control of the Charlestown property, the Charlestown Edison Electric Company will purchase the electric division of the business. Both of these statements, on the other hand, are denied by President Edgar, who emphatically declares that negotiations are not underway looking to the disposal of either or any section of the Company's trading. Meanwhile the advance in the shares could be naturally explained on the ground that the earnings of the Charlestown Gas and Electric Company have increased and are increasing so rapidly that the corporation could be put at once on a 12 per cent. dividend basis.

"THE December meeting of the Brockton (Mass.) Gas Light Company's Employees Association was a notable one. To begin with President Moran entertained a motion to appoint a physician on Association account, and Dr. P. P. Crimmins was appointed as such. Messrs. C. B. Deady, M. J. Curtis and E. H. Neafsey were named to arrange for a banquet, to be served sometime next month, and it was also voted to close the charter. These things determined Mr. Jno. P. Meade addressed the members on the subject of the Workingmen's Compensation Act, giving a plain statement respecting operation. In this presentation Mr. Meade said that one of the most important features of the new law is, 'That the people are being informed as to the widespread effect of industrial injury; that the efficiency of the law is strengthened by the provision that the employer must notify the Board, or be fined $50. During the first 2 months after the new Act was in effect, 91 fatalities were reported, the largest number happening in the building trades and on the railroads. Of the sufferers 66 left dependants, 47 of whom were widows and 87 were children.' The speaker, in referring to this phase of the mater, said: 'We must think of what would have become of these widows and children, had the law not been in operation? They would have been thrown upon the resources of their friends, and no doubt several would have found their way into charitable institutions. Also, the family group would have been separated and that influence for good would have been lost.' Mr. Meade having finished his address, a very pleasing 'social symposium' was shared in. Mr. J. F. Teolin presided at the piano, and 'varying songs' were rendered by Messrs. T. J. Langley, Jno. E. Neafsey and E. H. Neafsey. 'Will.' Jodoin and B. Gilian exhibited some very clever illustrations of buck-and-wing dancing, and 'Mike.' recited a sketch that did not cause the falling of a single tear. Hot coffee, sandwiches and other trimmings were then served, and the session was brought to an end by a clever speech from the Superintendent (Mr. H. K. Morrison), who praised the work so far done by the members, and urged them to keep up their interest in the organization. He also commended the harmonious working of the bowling league, and of the other amusements as well, all of which tended to keep up and add to true fraternal spirit. —M. R. S."

MR. C. G. WALLNEY, for some time Chief Accountant in the Nevada City (Cal.) branch of the Pacific Gas and Electric Company, has resigned the named position.

MR. H. L. ALLER has been appointed Manager of the Pacific Gas and Electric Company's branch at Phœnix, Ariz., vice Mr. R. G. Whitmarsh, resigned.

MAYOR-ELECT WOODWARD, of Atlanta, Ga., and Councilman C. D. Knight, the active Chairman of the Auditorium Committee of Council, city of Atlanta, have purchased the chandeliers that illuminated the Auditorium during the recent meeting of the National Commercial Gas Association in that city early this month. The city will also retain the gas White-Way posts that rendered such efficient illumination over certain sections of Gilmer and Courtland streets. To cap the bargainings the city has also determined to keep the entire gas kitchen outfit that did such satisfactory work during the entire length of the Association's meeting times. This purchase fills "a long-felt want" in respect of the Auditorium's requirings, for the great structure never had any convenience in line of preparing food for service at banquets, and the like.

TITLE to the properties of the York (Neb.) Gas Company, which was to have been taken by or on the 10th inst., still remains untransferred. In fact, it is said the deal is "off."

"SOME evenings ago the Kelley Hotel restaurant, Elgin, Ills., was the scene of dinner festivities, the dinner having been tendered to District Manager C. B. Strohn, of the Western United Gas and Electric Company, by the officers and department heads of the latter. The table decoration was in the shape of a miniature standpipe, set up as a reminder of the recent local election in respect of the granting of a new franchise to the Company. Manager Peck did his work well, and beyond saying the affair was enjoyable and enjoyed, I'll make no further mention of it. It really was a 'family' affair.—V. R. S."

ADVICES from Denver, Col., dated the 10th inst., are to this effect: "Powerful interests are behind the reorganization of the Central Power Company, the rejuvenation of which was accomplished in New York earlier in the month. Mr. G. H. Walbridge, President of the Company, arriving from New York the 9th inst., when interviewed on the matter said: "The banking interests behind the reorganization are Messrs. Lee, Higginson & Co., of Boston, and William P. Bonbright and the Electric Bond and Share Company, of New York. These are the bankers who financed the original project, and their faith in its ultimate success is just as strong as ever. Under the reorganization the Company will issue $8,814,037 in common stock and $326,762 in preferred. It will also issue $3,369,250 in 30-year, 1st mortgage, 5 per cent. bonds. The capitalization of the present Company of which President Walbridge and General Manager Hamilton are receivers, is $32,500,000, on which it has been unable to pay interest. With the smaller capitalization and increased demand for the Company's power in sight, it is believed that it will be on a firm financial footing in the future. The Denver City Tramway Company will use 2,000-horse power of the Company's electric current right after the completion of the Tramway's new transformer station, which will be within a month or two; and a contract has been closed whereunder the Denver Gas and Electric Light Company will take a large volume of electric current. With the electrification of the Denver and Rio Grande Railroad over Tennessee Pass, which has been announced by the Railroad Company, the Central Company will likely be taxed to furnish all the power that will be demanded of it. Its Shoshone and Nederland plants are capable of generating 40,000-horse power or one hundred millions kilowatt hours annually."

"THE St. Paul (Minn.) Section of the National Commercial Gas Association held its annual meeting in the Hotel Ryan, the evening of December 10th. The officers elected were: President, W. C. Beckford; Secretary, R. B. Wallace; Executive Committee, F. A. Otto, H. J. Gille and B. F. Pelton. Mr. V. L. Elbert gave an interesting lecture on 'Gasholders,' which was appropriately punctuated by a series of well-handled stereopticon slides. A further interesting number was a well put together speech on 'Electricity' by Chairman Beckford. The meeting was very well attended."

MR. J. N. RENFROE, a member of the Atlanta (Ga.) board to curb the smoke nuisance, having looked over the exhibits at the recent gas appliance show connected with the meeting of the N. C. G. A., purchased a photometer (pentane standard), a 5-foot meter prover, a calorimeter and a sulphur testing apparatus, paying for the same on personal account. He will be reimbursed later, provided the authorities are Barkeis minded. We suppose that Mr. Renfroe proposes to try out the city's gas on "smoke board" account; but he surely will have to "hire" an expert in the handling of the apparatus, which should cause the investment to come rather high. Especially so, since the Atlanta Gas Company would undoubtedly allow him the use of its apparatus, and furnish an expert, too, to see that the apparatus was properly "read."

THE Nebraska Blau gas works and plant, which have been under construction and equipping since mid-summer, was put into active operation in Omaha the afternoon of the 10th inst., the Commercial Club being mainly concerned with the initial ceremonies. The plant represents an expenditure of $150,000.

THE proprietors of the Galesburg (Ills.) Gas and Electric Light Company have forwarded us the following statement respecting the new electric current service schedule, to become operative the 1st prox.: "On 3-year contracts we will make a residence rate of 15 cents per kilowatt hour for the first 30 hours' using of 60 per cent. of connected load; 7½ cents per kilowatt hour for current consumed in excess of said volume; with 10 per cent. discount for payment within discount period. The new commercial rates are: 11 cents per kilowatt hour for first 50 hours' use of constant load, as a minimum charge, and 6 cents per kilowatt hour for all current consumed in excess of this amount, with a discount of 1 cent per kilowatt hour for payment within the discount period."

The Market for Gas Securities.

The market for city gas shares showed evidence of returning sanity, for, in the face of some persistent selling, those who buy for investment were prominent in the action of the battle for the high and low. Consolidated came in this morning (Friday) at 139 to 140, and before noon sales had been made at 139¾. The bond market, accredited issues, was also quite active.

Brooklyn Union shows no change in the bid price, but there is nothing to chronicle in respect of this sterling security than to say it seems utterly neglected. Peoples, of Chicago, recovered a point or so, but it certainly is 25 points below its market value. Massachusetts issues are in better demand; but Lacledes are absolutely lifeless.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

DECEMBER 23.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$78,177,000	100	139¾	140
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	8,000,000	1,000	108	108
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	106	106
Mutual Gas Co.	3,500,000	100	182	187
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	101	102½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	35	50
1st Mtg. Gold Bds. 5 p. ct.	1,500,000	—	98½	100½
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	95	100
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	99½	101
Standard	5,000,000	100	60	70
Preferred	5,000,000	100	90	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	103	105
The Brooklyn Union	15,000,000	1,000	138	142
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	299,650	500	180	—
Out-of-Town Companies.				
Bay State	50,000,000	50	½	⅝
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	500,000	1,000	97	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,660,000	1,000	104	105¼
Cincinnati Gas and Electric Co.	29,500,000	100	87	90
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	90¼	91
Preferred	3,026,500	100	75¼	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	13,460,084	—		—
Mortgages, 5's	3,400,000	—		—
General Mortgage 4½	10,661,000	—		—
Con. Gas Co., Baltimore City, 4½	2,751,000	—		—
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	94	96
Bonds	75,000	—	—	100
Detroit City Gas Co.	6,580,000	—	—	50
Detroit Gas Co., 5's	381,000	1,000	75	80
" Prior Lien 5's	5,619,000	1,000	97	100½
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	133	136
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	180	183
" Bonds, 5's	10,500,000	—	104	106
Indianapolis	2,000,000	—	38	45
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	91	95
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	86
Bonds, 1st 5's	3,822,000	1,000	98½	99
Laclede Gas Co., St. Louis.	10,000,000	100	102	103½
Preferred	2,500,000	100	99	102
Bonds	10,000,000	1,000	102¾	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	120	120
Madison Gas and Electric Co.				
" 1st Mtg. 6's	400,000	1,000	106	
Massachusetts Gas Companies, of Boston	25,000,000	100	91	91¾
Preferred	25,000,000	100	94	95
Montreal Gas Co., Canada	2,000,000	100	228	229
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	97	98
Bonds, 6's	6,000,000	—	127	128
New Haven Gas Co.	5,000,000	25	182	190
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	112	112¾
1st Mortgage	20,100,000	1,000	102	103½
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105¼
Pacific Gas and Electric Co.	15,500,000	—	64¾	65
St. Joseph Gas Co.—				
1st Mtg. 5's	1,000,000	1,000	96	98
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	104	105
Extension, 6's	600,000	1,000	112¾	115
General Mortgage, 5's	3,447,000	1,000	94	96
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	101	103
Washington (D. C.) Gas Co.	1,600,000	300	427½	430
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	—	—

MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, October 15-17, 1913. Officers: President, W. R. Addicks, New York City. Secretary, Geo. G. Ramsdell, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting Sept. 1913. Officers: President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, New York City, Oct. 8, 1913. Officers: President, C. G. M. Thomas, Long Island City, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street. New York City.

Gas Meters.—Next Meeting, January; Chairman, Will W. Barnes; Commissioners, W. H. Pettes, I. W. Peffly; Secretary, H. Thurston Owens, 42 Pine street, New York City. Philadelphia Section; Chairman, L. R. Dutton; Commissioners, S. Grady, H. P. Dains; Secretary, H. F. Patterson, Jr., 831 Chestnut street.

Gulld of Gas Managers of New England.—Annual meeting, March, 1913. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

Illinois Gas Association.—Annual meeting, March 19th and 20th, 1913. Chicago, Ills. Officers: President, H. O. Channon, Quincy, Ills.; Secretary-Treasurer, Horace H. Clark, 115 No. Oak Park avenue, Oak Park, Ills.

Illuminating Engineering Society.—Annual meeting,——— September, 1913. Meetings of Sections, monthly. Pres., V. R. Lansingh, Cleveland, O.; Sec., Preston S. Millar, 29 W. 39th street, New York City. Sections: New York, Secretary, C. L. Law, 124 West 42d street. New England, Secretary, H. C. Jones, 10 High street, Boston, Mass. Philadelphia, Secretary, L. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, J. B. Jackson, 28 North Market street. Pittsburgh, Secretary, J. C. Mundo, Oliver Building.

Indiana Gas Association.—Annual meeting, March 12 and 13, 1913. Indianapolis. Officers: President, Howard L. Olds, Indianapolis; Vice-President, Wm. Wallace, Lafayette; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, May 22, 23, 24, 1913; Burlington, Ia. Officers: President, C. W. Fair, Atlantic, Ia.; Secretary, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, October——1913. ——— Officers: President, L. O. Ripley, Emporia, Kas.; Secretary and Treasurer, W. H. Fellows, Leavenworth, Kas.

Michigan Gas Association—Annual meeting, September——1913; ——— Officers: President, W. S. Blauvelt, Detroit, Mich; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April, 1913; Mexico, Mo. Officers: President, P. A. Bertrand, Joplin, Mo.; Secretary and Treasurer, P. W. Markham, Brookfield, Mo.

National Commercial Gas Association.—Annual meeting———1913. Philadelphia, Pa. Officers: President, C. W. Hare, Philadelphia Pa.; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, Cleveland, O., May 20-22, 1913; Officers: President, M. B. Daly, Cleveland, O; Secretary, T. C. Jones, Delaware, O.

New England Gas Association.—Annual meeting, February, 19th and 20th, 1913 Boston. Officers: President, D. D Barnum, Worcester, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

New Jersey State Gas Association.—Annual Meeting, April —, 1913, ——— N. J.—President, William H. Pettes, Newark, N. J.; Secretary-Treasurer, Arthur H. Osborn Belmar, N. J.

Ohio Gas Association.—Annual meeting, February ———, 1913, Columbus, O.; President, John M. Garard, Columbus, O.; Secretary, L. B. Denning, Columbus, O.

Oklahoma Gas, Electric and Railway Association.—Annual meeting, Oklahoma City May, ——1913. President, F. W. Caldwell, Shawnee, Okla.; Secretary, H. V. Bozell, Norman, Okla.

Pacific Coast Gas Association.—Annual meeting, San Jose, Cal., September 16, 17, 18, 1913. Officers: President, Henry E. Adams, Stockton, Cal.; Secretary-Treasurer, Henry Bostwick, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, York, Pa., April 9-11, 1913; Officers, President, H. H. Ganser, Norristown, Pa.; Secretary-Treasurer, W. O. Lamson, Jr., West Chester, Pa.

Society of Gas Lighting.—Annual meeting Dec., 11, 1913; monthly meetings, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 29 West 39th street, New York city

Southern Gas Association.—Annual meeting, Charlotte, N. C, April 18-20, 1913, Officers: President, C. E. White, Montgomery, Ala.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. May 21, 22, 23 and 24, 1913, Galveston, Tex. Officers: President, F. M. Lege, Jr., Galveston, Tex.; Secretary H. S. Cooper, 405 Slaughter Bldg., Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May 14 and 15, 1913, Milwaukee, Wis. Officers: President, I. F. Wortendyke, Janesville, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.